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TACTICS, TECHNIQUES, AND PROCEDURES FOR FIRE SUPPORT FOR THE COMBINED ARMS COMMANDER

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Preface

Like its predecessors TC 6-71 (1988) and the first field manual-version of FM 6-71 (1994), this publication is intended for you, the combined arms brigade or battalion commander, and your staffs to help you synchronize fires with your scheme of maneuver. You know from experience that combat forces must be employed as part of the combined arms team. Maneuver and fires must be synchronized and orchestrated by the combined arms commander to realize the full potential of each arm and maximize the combat power of the combined arms team. The same applies in principle to firepower. Mortars, cannon and rocket artillery, naval gunfire, and air support on the lethal side, and Intelligence and Electronic Warfare and Information Operations systems on the non-lethal side, are various means to deliver fires. Each has its own advantages and disadvantages. Each provides a measure of capability the others lack: responsiveness, flexibility, and accuracy from mortars and artillery; precision and destructiveness from close air support; disruption of command and control and capability to exclude collateral damage from IEW and IO systems. Using all of these means in combination creates a synergistic effect – the whole system is far more effective than its parts. The proper application of fires requires as much skill and orchestration from the combined arms commander as it does from the fire support coordinator (FSCOORD). This is what this publication is about, to help clarify the art of applying fires at the right time and place on the battlefield.

The proponent for this publication is HQ TRADOC. Send comments and recommended changes on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:

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Comments and recommended changes can also be emailed to the USAFAS doctrine point of contact for this manual through the WIDD homepage at URL: http://155.219.39.98/widd.

Unless this publication states otherwise, masculine nouns or pronouns do not refer exclusively to men.

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TACTICS, TECHNIQUES, AND PROCEDURES FOR **FIRE SUPPORT FOR THE COMBINED ARMS COMMANDER**

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*** This publication will supersede FM 6-71, 29 September 1994.**

Chapter 1
SYNCHRONIZATION

"There is still a tendency in each separate unit…to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tanker to charge, the artilleryman to fire…That is not the way to win battles. If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get the harmony in music each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins. You musicians of Mars must not wait for the band leader to signal you…You must each of your own volition see to it that you come into this concert at the proper place and at the proper time…"

General George S. Patton, Jr., 8 July 1941, address to the men of the 2nd Armored Division, The Patton Papers, Vol. II, 1974

1-1. Synchronization is the arrangement of military actions in time, space and purpose to produce maximum relative combat power at a decisive place and time. Combined arms operations are the synchronized and simultaneous application of several arms, such as infantry, armor, aviation, artillery, engineer, intelligence and air defense to achieve greater effects on the enemy than that achieved if each arm were used against the enemy in sequence or against separate objectives. The challenge to the combined arms commander, given the assumption that he does not possess unlimited combat resources, is to achieve synchronization. While success in any battle, engagement or operation is never guaranteed, its achievement is much more likely for the commander who can synchronize military actions.

OPERATIONS AND DOCTRINE

1-2. The range of operations for which the combined arms commander must be able to synchronize military actions is broad. While primarily concentrating on offensive and defensive operations, he must also be able to synchronize his unit's activities during stability operations and support operations (SASO) when given those missions. This manual will focus primarily on Tactics, Techniques and Procedures (TTP) for synchronizing maneuver and fire support in offensive and defensive operations. It will also present considerations for synchronizing actions during SASO – to include the consideration of Information Operations in all operations. The capstone doctrinal references for fire support are JP 3-09, *Doctrine for Joint Fire Support* (12 May 1998) and FM 3-09, *Doctrine for Fire Support* (TBP 1st Qtr, FY02).

Tactics

1-3. Tactics are: The employment of units in combat; the ordered arrangement and maneuver of units in relation to each other and/or the enemy in order to use their full potentialities; the art and science of employing available means to win battles and engagements; the specific techniques used in the movement and positioning of forces on the battlefield in relation to the enemy, the provision of fire support, and logistical support of forces prior to, during, and following engagements with the enemy.

1-4. FM 3-40, *Tactics*, is the basic doctrinal reference for tactics. Knowledge of its contents is assumed for maneuver commanders. Similarly, armor and mechanized commanders delineate their TTP in the FM 71-series, infantry in the FM 7-series and aviation in the FM

1-series. Combined arms commanders must *insist* that their FSCOORDs and FSOs understand the maneuver TTP of these manuals – fire supporters must take it upon themselves to become as well versed as possible in maneuver TTP. Conversely, FSCOORDs and FSOs should *recommend* that their supported commander become familiar with the TTP of this manual and with the respective FM 6-series fire support TTP manual for their level of command (FM 6-20-60 – Corps; FM 6-20-30 – Division; FM 6-20-40 – Brigade; FM 6-30 – Battalion / Task Force and Below). This manual presents the tactics of fire support by providing considerations for the commander and FSCOORD/FSO during offensive, defensive, stability, and support operations. These considerations should be used to ensure the major planning and executing "fundamentals" of fire support are recognized and their utilization thought out as a concept of the operation is formulated.

Techniques and Procedures

1-5. Techniques are: The general or detailed methods used by troops and/or commanders to perform assigned missions and functions, specifically the methods of using equipment and personnel. A procedure begins with a specific, documentable event that causes an activity to occur. The activity must produce a product that normally affects another organization/element. Frequently, that product will be the event that causes another procedure to occur. It is important to recognize that a procedure determines "what" an organization must do at critical periods but does not direct "how" it will be done. FM 6-20-40 delineates *TTP for Fire Support for Brigade Operations*. FM 6-30 does the same for *TTP for Observed Fire and Fire Support at Battalion and Below*. This manual presents summarized techniques and procedures for synchronizing fires and maneuver during the planning, preparation and execution phases of an operation.

INTEGRATION OF FIRE SUPPORT INTO THE CONCEPT OF THE OPERATION

1-6. Fire support plans that are not integrated with maneuver plans result in unsuccessful fires in support of the operation. Integrating fire support leads to synchronization. It requires the commander and his staff to think both maneuver *and* fires at each step of the Military Decision Making Process (MDMP). Conversely, it should also cause commanders and staff to think both fires *and* maneuver throughout the targeting process. At brigade and battalion, the targeting process can be subsumed within the MDMP and requires no more people, equipment or time than what is used already in the MDMP.

1-7. The MDMP and targeting process require the same people: the battle staff. Targeting merely requires each member of the battle staff to provide more specific information and clearer focus at each step of the MDMP. Every order produced by a maneuver staff is a product of the targeting process. The decision to use an armored versus a mechanized task force is the result of the targeting process (DECIDE function). As for time, nothing extra is being added to the staff's battle rhythm. Initial targeting decisions are made within the purview of the MDMP. Subsequent decisions are made daily or as the situation dictates as the staff *jointly* assesses current and future operations within the context of what have become known as *targeting meetings* (which occur while the DETECT, DELIVER and ASSESS functions of previous targeting meetings are being executed). [More on targeting within the MDMP in Chapter 4]

TTP TIPS

Throughout this manual, certain information will appear in text boxes under the title: TTP TIPS. These summarize a Center for Army Lessons Learned finding or a TRADOC trends reversal study and provide you with additional considerations to use in solving the synchronization challenge.

Chapter 2
FIRE SUPPORT RESPONSIBILITIES

"Our goal must be to enable combined arms commanders to fight fire support systems with the same skill and vigor with which they employ direct fire systems."

MG Fred F. Marty, Chief of Field Artillery, June 1992

2-1. You have a Fire Support Coordinator (FSCOORD) at each echelon of command from company through brigade. At company and battalion levels, he is the fire support officer (FSO). At brigade level, the DS battalion commander is the FSCOORD; his full-time assistant is the brigade FSO. The FSCOORD's and FSO's first obligation is to enable combined arms commanders to synchronize fires with maneuver. They accomplish this by understanding your intent, translating your guidance into essential fire support tasks, advising you and your staff on the proper employment of fire support means and actively managing the execution of the fire support plan. Each time you sit down with your S3 to discuss current or future plans, concepts or courses of action, your FSCOORD or FSO should be there. While the FSCOORD and FSO are the primary fire support coordinators, virtually everyone on a brigade or battalion staff has a role in the synchronization challenge, as described in the remainder of this chapter.

MANEUVER COMMANDER

2-2. Major responsibilities for fire support include:

- *Synchronize* fire support with the scheme of maneuver.

- Ensure the FSCOORD and FSO understand your *fire support guidance*. Use doctrinal terms per FM 101-5-1 and FM 3-40 or more descriptive language, but state the TASK(s) and PURPOSE(s) in no uncertain terms. Focus on the what, where, when (and for how long) and why – your FSCOORD/FSO will come back and recommend the how.

- Ensure your staff integrates reconnaissance and surveillance (R&S), maneuver, fires (including offensive IO and other non-lethal means if applicable), A2C2 and obstacles. Have someone responsible for "overlaying the overlays" – whether analog or electronic.

- Approve the fires paragraph, High Payoff Target List (HPTL), Attack Guidance Matrix (AGM), Target Selection Standards (TSS), or a Target Synchronization Matrix (TSM) that combines the preceding three, the Essential Fire Support Tasks (EFST) and their logical execution sequence.

- Approve Fire Support Coordinating Measures (FSCMs).

- Clear fires in zone. Normally this is executed at the TOC with the FSO or FS Plans Officer leading the staff through a clearance of fire battle drill. (More on clearance of fires in Chapter 4).

- Train company and team commanders to know, understand and execute targets in their zone. Train the staff and Brigade Reconnaissance Team commander on proper tactical employment of the Striker Platoon.

MANEUVER XO

2-3. Major responsibilities for fire support include:

- Integrate the targeting process into the MDMP and normal brigade/battalion battle rhythm.
- Conduct targeting meetings. Supervises the DECIDE function of targeting. (More on targeting meetings in Chapter 4)

MANEUVER S3

2-4. Major responsibilities for fire support include:

- In the absence of the XO, integrate targeting into the MDMP and conduct targeting meetings.
- Based on the FSO's recommendation, integrate all fire support assets into the concept of the operation.
- Select, with the commander, combined arms engagement areas to kill the enemy.
- Develop the synchronization matrix that includes fire support.
- Develop a decision support template (DST) with input from the FSO.
- Integrate fire support actions and the execution of EFSTs into the combined arms rehearsal.
- Approve positioning of field artillery and other fire support assets.
- With input from the staff, especially the S2 and FSO, decide the HPTs that will be presented to the commander for approval.

MANEUVER S2

2-5. Major responsibilities for fire support include:

- Identify High Value Targets (HVTs).
- Participate in the targeting meeting.
- Develop an R&S plan that synchronizes targeting requirements with collection assets. Supervises execution of the DETECT and ASSESS functions of targeting.
- In conjunction with the staff, especially the FSO and Targeting Officer, develop targets.
- Recommend HPTs. Provide input to the FSO on TSS.

TTP TIP

Give all battle staff officers/NCOs the responsibility of assisting the S2 with IPB. At a minimum, each can contribute in refining situation templates for high-value targets within their BOS. The S2 will benefit from collective staff knowledge on the enemy; the staff will benefit from greater insights on the effects of IPB on their friendly BOS systems.

BRIGADE/BATTALION ENGINEER

2-6. Major responsibilities for fire support include:

- Plan SCATMINE - including those FA-delivered. Coordinate with the S3, S2 and FSO for emplacement.
- Coordinate fire support coverage of designated mine fields and other obstacles.
- Determine SCATMINE safety box and disseminate the scatterable mine report.
- In conjunction with the S2 and FSO continuously adjust target locations as planned locations become emplaced obstacles.

BRIGADE/BATTALION CHEMICAL OFFICER

2-7. Major responsibilities for fire support include:

- Recommend smoke and riot-control agent use.

MANEUVER S3 AIR

2-8. Major responsibilities for fire support include:

- Coordinate and process close air support and JAAT requests.
- Advise the USAF TACP of the ground tactical situation and other information as requested.
- At brigade, supervise the A2C2 element.

ALO/TACP

2-9. Major responsibilities for fire support include:

- Supervise the TACP.
- Coordinate and monitor requests for CAS and air interdiction.
- Keep the S3 and FSO informed of the current status of available air support.
- TACPs assist in the integration and synchronization of air support, coordination of preplanned and immediate air requests, and in the coordination of A2C2 issues.
- Battalion TACPs are responsible for terminal attack control.

FSCOORD/DS BATTALION COMMANDER

2-10. Major responsibilities for fire support include:

- Plans and coordinates fire support for the maneuver brigade. Is the principal advisor on fire support matters to the brigade commander. Collocate with the brigade commander as necessary, but normally during mission execution.
- Commands the unit providing primary fire support to the force.
- Participates as feasible with the brigade orders group and during targeting meetings. *Assists* in the synchronization of fires and maneuver.
- Provides accurate, timely and effective FA fires.
- Approves the DS battalion Field Artillery Support Plan (FASP). Ensures the plan provides executing instructions for assigned Essential Field Artillery Tasks

(EFATs). As the DS Battalion Commander, provides an intent statement (1st subparagraph of paragraph 3 of the FASP) for his field artillery staff, subordinate commander's and soldiers.

BRIGADE FSO

2-11. Major responsibilities for fire support include:

- Assists in the planning and coordination of fire support for the maneuver brigade. In the FSCOORD's absence is the principal advisor on fire support matters (assets, capabilities, limitations, and missions) to the brigade commander and his staff.
- *Assists* in the synchronization of fires and maneuver.
- Coordinates the DELIVER function of targeting. Directs the attack of targets by fires IAW the priorities and effects established by the maneuver commander.
- Keeps the maneuver commander, FSCOORD and staff informed of the current status and activity of all fire support assets.
- In conjunction with the Targeting Officer and DS Battalion S2, keeps the maneuver S2 informed of enemy indirect fire capabilities and limitations.
- Participate in the MDMP and targeting process, keeping the DS battalion S3 informed throughout. Develop for approval: the fire support plan with EFSTs and supporting products (HPTL, AGM, TSS, TSM, Fire Support Execution Matrix [FSEM]). Disseminate approved plans and products to the DS artillery battalion, battalion FSOs, division FSE, and Divarty.
- Ensures battalion FSOs are aware of assigned EFSTs and are refining targets IAW top-down fire planning. Produces the Brigade Target List.
- Acts upon and coordinates requests for fire support from battalion FSOs. Continually assess fire support asset availability and recommends priorities and allocation of fire support.
- Resolves duplication on planned target lists.
- Manages the clearance of fire battle drill within the TOC.
- Recommends FSCMs.
- Assists the S3 in terrain management for fire support assets.
- Coordinates with the ALO and S3 Air for use of CAS and with the S3 Air for A2C2 actions.
- Coordinates with the IEW, IO, CA, PSYOP and other non-lethal representatives as appropriate for the non-lethal attack of targets and integration of information operations (IO) into the concept of the operation.
- ICW the engineer plans fires to support mobility and countermobility operations.

- During the MDMP and targeting meetings, recommends ICW the S2 and S3, what targets to attack, when and where to attack them, and with what assets (lethal/non-lethal).

- Anticipates changes during mission execution and recommends and coordinates revisions to the fire support plan.

- ICW Divarty, the maneuver S2, Targeting Officer, battalion FSOs and DS battalion S3 and S2, plans for the employment of Firefinder radars and the establishment and managing of radar zones.

- Plans COLT and Striker employment.

- ICW the ALO and the ADA representative plans to suppress or destroy enemy air defense as necessary during CAS and Army aviation employment.

- Participates in combined arms rehearsals and conduct fire support rehearsals.

BRIGADE FIRE SUPPORT PLANS OFFICER

2-12. Major responsibilities for fire support include:

- Assists the brigade FSO perform his duties and acts as the FSO in his absence.

- See responsibilities of FSO above.

TARGETING OFFICER

2-13. Major responsibilities for fire support include:

- Assist the brigade S2 with the R&S plan by providing input on radar zones and search sectors.

- Manage changes to radar zones. Coordinate with all affected elements.

- Assist in the development of targeting products.

- ICW the brigade S2 and FSO, manage the detect, deliver and assess functions on brigade high payoff targets.

DS BATTALION S3

2-14. Major responsibilities for fire support include:

- ICW the brigade OPORD, Divarty FASP and guidance received from the DS battalion commander, plans for the accomplishment of EFATs.

- Coordinates positioning of FA assets with the brigade S3 through the FSO.

- Participates as feasible in the brigade MDMP and combined arms rehearsals.

TTP TIP

When possible, have the DS Battalion S3 at the maneuver TOC through as much of the MDMP as he can afford. The field artillery piece of synchronization will be better managed and parallel planning will be enhanced – he just has to maintain constant comms with his TOC.

BATTALION FSO

2-15. Major responsibilities for fire support include:

- The fire support coordinator for the maneuver battalion commander. His primary advisor on all matters pertaining to fire support.
- Perform the same or similar duties for the battalion as the brigade FSO does for brigade.
- Develops the battalion observation plan. Plans for and supervises the execution of assigned and developed EFSTs.
- Participate in brigade AND battalion combined arms rehearsals.
- Recommends to the maneuver battalion commander how to best employ and control FISTs. Options include centralized control of a "pool" of FISTs to execute brigade and battalion EFSTs; decentralized control down to company level to execute brigade, battalion and company EFSTs; or, a combination of the two.

COMPANY COMMANDER

2-16. Major responsibilities for fire support include:

- Ensures assigned targets are refined, observed, rehearsed and fired in according to the scheme of fires.
- Positions fire support personnel where they can best execute EFSTs.
- Ensures the company FSO participates in all combined arms and fire support rehearsals.

COMPANY FSO

2-17. Major responsibilities for fire support include:

- The fire support coordinator for the maneuver company commander. His primary advisor on all matters pertaining to fire support.
- Assists the company commander plan for and supervise the execution of assigned and developed EFSTs.
- Refines brigade and battalion targets assigned to the company.
- Participates in combined arms (brigade through company) and fire support rehearsals.

COLT TEAM CHIEF and STRIKER PLATOON LEADER

2-18. Major responsibilities for fire support include:

- Execute brigade EFSTs.
- Initiate fires on targets within target areas of interest (TAI), engagement areas (EA) or trigger points.
- ICW with information received from brigade reconnaissance observation of named areas of interest (NAI), act as the brigade commander's "killer" of targets outside of battalion direct fire/scout range.

INTELLIGENCE AND ELECTRONIC WARFARE STAFF OFFICER

2-19. Major responsibilities for fire support include:

- Advise the commander and staff on the electronic attack of HPTs.
- Advise the commander and staff of possible IEW actions to help achieve non-lethal targeting guidance/desired effects during the MDMP and targeting meetings.

STAFF JUDGE ADVOCATE

2-20. Major responsibilities for fire support include:

- Advise the commander and staff on the legal ramifications of the attack of each HPT.
- Provide ROE advice and expertise during planning and execution.

PSYOP REPRESENTATIVE

2-21. Major responsibilities for fire support include:

- Keep the commander and staff informed of psychological operations that could impact the unit.
- Advise the commander and staff on possible psychological operations to help achieve non-lethal targeting guidance/desired effects during the MDMP and targeting meetings.

CIVIL AFFAIRS REPRESENTATIVE

2-22. Major responsibilities for fire support include:

- Keep the commander and staff informed of civilian activities that could impact the unit.
- Advise the commander and staff on possible civil affair operations to help achieve (targeting) guidance during the MDMP and targeting meetings.

INFORMATION OPERATIONS (IO) COORDINATOR

2-23. Major responsibilities for fire support include:

- Keep the commander and staff informed of all IO that could impact the unit.
- Advise the commander and staff on possible IO actions to help achieve non-lethal targeting guidance during the MDMP and targeting meetings.

MI COMPANY COMMANDER

2-24. Major responsibilities for fire support include:

- Keeps staff informed on status of organic and attached collection and electronic attack assets.
- Ensure assigned Detect, Deliver (if applicable), and Assess tasks are planned and prepared for and executed IAW the concept of the operation, R&S Plan, and Target Synchronization Matrix (if applicable).

AVIATION LNO

2-25. Major responsibilities for fire support include:

- Advise the commander and staff on the use of attached/OPCON aviation assets.
- Assist in A2C2 management.
- Exchange targeting information with parent headquarters during the MDMP and immediately following targeting meetings.

Chapter 3
THE TACTICS OF FIRE SUPPORT

"No one starts a war – or rather, no one in his senses ought to do so – without ***first being clea****r in his mind* ***what he intends to achieve*** *by that war and* ***how he intends to conduct it.*** *The former is its political purpose; the later its operational objective. This is the governing principle which will set its course,* ***prescribe the scale of means and effort which is required****, and make its influence felt throughout down to the* ***smallest operational detail." (emphasis added)***

Field Marshall Carl von Clausewitz, *On War*,
viii, 1832, tr. Howard and Paret

3-1. The ideas set forth by Carl von Clausewitz over 150 years ago on the nature of war still have tactical applicability today. As a unit prepares for an operation and the staff conducts the MDMP, the commander visualizes the purpose, objective and key tasks and expresses them as his intent. Additionally, he will give planning guidance to his staff to assist in COA development. This chapter provides fire support considerations for various types of operations. Gaining an appreciation of how to apply fire support in offensive, defensive, stability and support operations, as well as during MOUT, breaching, passages of lines and airborne and air assault operations, will help you develop your guidance for fire support and key you in on the type of information the FSCOORD / FSO should be providing.

OFFENSIVE OPERATIONS

3-2. Fire support in offensive operations is characterized by centralized planning with decentralized execution. Planning factors, such as EFSTs, on order missions, priorities of fire, FSCMs, etc., must be developed within a flexible framework to allow changes to be made and efficiently disseminated, understood and implemented. Before you issue your planning guidance, and as part of visualizing your decisive point(s), determine how fires will set the conditions for actions at the decisive point (s) / objective(s) and/or how they will augment your actions at those decisive points / objectives.

TTP TIP

Place FSCMs, especially the CFL if established, where they make tactical (IAW a METT-TC analysis) sense and aid in facilitating the attack of targets (permissive) or preventing fratricide (restrictive). For example, always using Phase Lines as CFLs may fail to account for the **E**nemy consideration of M**E**TT-TC for FSCM establishment and can hamper, rather than assist, the rapid attack of targets of opportunity.

Movement to Contact

3-3. Consider placing a battery with the advance guard in a brigade MTC or battalion mortars with the advance guard in a task force MTC to provide immediately responsive fires. Paladin units are ideally suited for supporting this operation because of their fast emplacements and on-board computing capability.

3-4. Once contact is made, the brigade (FSCOORD's recommendation; your decision) must be prepared to shift priority of fires to the unit in contact and control of all available fires to the observer who is in the best position to control fires against the enemy.

3-5. If intelligence supported, have fires planned on reserves and uncommitted forces to facilitate freedom of action once contact is made. Have fires planned along the axis of advance to assist in dealing with contingencies. Likely support by fire positions should be covered with an on-call critical friendly zone (CFZ). Have the staff consider fire support to security and reconnaissance forces. Consider consolidating FIST assets. Does the trail battalion or companies need their FISTs when they could be executing brigade EFSTs or augmenting the lead battalion/company?

3-6. The proper synchronization of maneuver with fires demands that rehearsals consider the movement of fire support assets (who, when, where, how) tied to flexible, yet known, triggers. Ensure the FSCOORD is maximizing the use of priority targets and that these targets are being put into effect and canceled based on the forward element's movement. Ensure the FSCOORD/FSO plans for possible breaching operations (if applicable) considering the S(uppress) and O(bscure) of SOSR, especially.

Hasty Attack

3-7. Depending on time available, fire support plans are generally more centralized and directive. Consider the use of quick fire planning techniques. Develop SOP items that facilitate planning under time constraints.

3-8. In all offensive actions, particularly this one and the movement to contact because of an unclear enemy situation or lack of detailed planning time, the DETECT function will be the most difficult to execute. Give the R&S and observation plans your personal attention (if feasible).

3-9. Realize subordinates units will also have less time to plan for this type of operation. On the fire support side, this might mean the DS Battalion S3 (and his S2 and FDO) as well as the Battalion FSOs or FSNCOs should be at the brigade TOC while the plan is being developed (at least through COA decision).

3-10. If a hasty attack is being conducted from a transition out of a movement to contact, have clear triggers for command or support relationship changes (if any are planned). For example, the mortars may have been DS to the lead company in a MTC, now revert back to GS for the hasty attack; or, a COLT or Striker team attached to the lead battalion reverts back to brigade control.

Deliberate Attack

3-11. There should be time to "overlay the overlays". Has the S3 ensured that the R&S plan, scheme of maneuver, fire support plan, engineer plan…are all integrated with each other?

3-12. Use fires, both lethal and non-lethal, to set conditions for success at decisive points / objectives. Employ COLTs and Strikers to execute brigade EFSTs; some EFSTs will probably have to be executed by subordinate battalions. The top-down fire plan should convey one "seamless" scheme of fires.

3-13. Ensure that the FSCOORD or FSO discuss with you and your staff the pros and cons of preparation fire before you issue planning guidance. This will become a significant EFST if part of your concept of the operation. Establish a definite trigger, initiated by a maneuver force, for the lifting and/or shifting of fires; consider redundant signals and *rehearse them*.

3-14. Enforce target refinement cutoff times. Consider carefully the decisions you will have to make based on an assessment of executed fires (have the conditions been set?) – what redundant means have been planned?

3-15. Bypass criteria and engagement criteria (e.g., "No FA fires on single moving vehicles") are very important for the FSCOORD so that he can not only tell his subordinates what threats they may face while moving to support you, but also help keep fires focused on EFSTs and HPTs. (More on attack guidance in Chapter 4). Bottom line: are fires supporting your concept throughout the AO for the duration of the mission?

TTP TIP

In breaching operations, suppression and obscuration fires will be planned. The key for effective FA support here is not just stating "how much" but "for how long". Express your desired suppressive effects by clearly articulating duration or another observable endstate (or condition that has been met).

Exploitation and/or Pursuit

3-16. Use fires, both lethal and non-lethal to sustain your momentum. FA movement for this phase of the operation should be planned as part of the original order. Again, Paladin units are ideally suited for supporting these operations. Gauge your rate of advance based on FA movement. Consider using fires to suppress pockets of resistance to allow uninterrupted advance of maneuver units.

3-17. Plan fires to slow the enemy's withdrawal and to disrupt reinforcements. If SCATMINE are used, precise safety determination and dissemination are critical so that friendly momentum will not be lost. The management of FSCMs and radar zone changes will have to be executed quicker in these operations – your decision will be sought here.

DEFENSIVE OPERATIONS

3-18. Fire support in defensive actions is characterized by centralized planning with centralized execution. Planning factors, such as EFSTs, on order missions, priorities of fire, FSCMs, etc., must be developed to support a synchronized attack at the place and time you want to kill the enemy. Before you issue your planning guidance, and as part of visualizing your decisive point(s), determine how fires will set the conditions for actions at the decisive point (s) and/or how they will augment your actions at those decisive points. The combined use of obstacles and fires in the defense plays a larger role in the concept of the operation because of the importance of countermobility. However, all BOS must be synchronized as in the offense. Fires are planned, and EFSTs determined, as in the offense.

Area Defense

3-19. Initial priority of fires is normally allocated to (forward) security forces. If the enemy is attacking in echelons, isolate the first echelon by initially focusing fires on the follow-on echelon(s).

3-20. Consider counterpreparation fires to disrupt enemy preparatory fires. Planning considerations for this EFST are similar to a prep in terms of ammunition consumption, counterfire, and assets required.

3-21. If the defense is planned as a phased operation (counter-reconnaissance, security zone, main battle, counterattack), EFSTs should be designated for each phase with triggers and dissemination instructions identified for when they change.

3-22. Specify engagement criteria for each phase of the defense. Single, lightly armored vehicles may be approved for FA attack during counter-reconnaissance operations but not during the main battle.

3-23. The FSCOORD should be coming to you asking for engineer assets to provide survivability positions for FA and radar assets. Same with mortars at battalion level. As for FSCMs, you can place the CFL close to your forward elements (have a trigger planned to move it once security forces join the main battle area) to facilitate the rapid attack of targets.

Security Zone Considerations

3-24. The positioning of fire support assets for the defense has to include considerations for support of security zone actions. Augment the security zone with additional observers. This will depend on the number and location of EFSTs to be executed. Ensure the FSO has considered communications with security forces, especially battalion scouts and COLTs/Strikers if operating in your AO.

Main Battle Area Considerations

3-25. Ammunition expenditures are historically higher in the defense. Ensure the FSCOORD or FSO backbriefs you on the FA capability to execute Essential Field Artillery Tasks (EFATs) and how loss of weapons and/or ammunition affects that capability.

3-26. If possible, tell the FSCOORD "…here is where I want every artillery piece in the brigade available to fire..." and indicating either an engagement area or TAI, specific time, a condition that presents itself, or a combination of these factors. Be as specific as possible in designating which obstacles will be covered with indirect fires. Your FSOs ought to recommend as part of a COA which, or how many, obstacles can be covered (you may have to prioritize). Providing redundant observers for EFSTs is relatively easier in the defense. Ensure the FSO does so in his observer plan.

3-27. Final Protective Fires (FPF) is a special mission used only in defensive operations. The FSCOORD / FSO recommends who gets them; you approve them.

3-28. Have the S3, FSO and S3 Air ensure there is no conflict between airspace coordination areas (ACA), air corridors and indirect fire positions.

TTP TIP

The maneuver commander, not the FSO, is responsible for executing EFSTs from the OPORD. That responsibility includes ensuring the target is refined, observed, rehearsed and executed according to the scheme of fires. You can help ensure that your subordinate commanders understand this by including EFST responsibility in paragraph 3d of the OPORD (tasks to subordinate units). During rehearsals, have your *maneuver commanders* articulate their *fire support responsibilities.*

Mobile Defense

3-29. If part of the striking force, retain your DS battalion – even prior to commitment. This simplifies C2, ammo management and positioning. When part of the striking force, plan and integrate fires as for a deliberate attack. When part of the defending force, plan and integrate fires as for an area defense. In either case, pay particular attention to the location of the converging forces and the need for an RFL.

Delay

3-30. Attack enemy forces far forward. Suppress enemy forces and degrade their ability to maneuver. Use CAS to help disengage and slow/attrit advancing enemy forces. Use your fires as an "overwatch" element if executing a bounding overwatch type maneuver scheme. Fires can cover obstacles, gaps and flanks, provide massed fires to delay the advancing

enemy, and integrate non-lethal fires, including screening fires, into the scheme. Consider the use of fires to assist in disengaging. Allocate FPFs as necessary.

Withdrawal

3-31. Have the FSO and Chemical Officer plan to mask the movement of friendly forces with smoke during both day and night operations. Leave the maximum number of firing units forward. Establish disengagement criteria for them and ensure this plan is rehearsed. Other considerations are similar to those for a delay.

STABILITY OPERATIONS

3-32. Non lethal fires may be the primary means of attack in many stability operations. Ensure the staff integrates the IO coordinator (if attached), PSYOPs rep, civil affairs rep, IEW staff officer, Public Affairs Officer, representatives from government agencies, non-governmental and possibly local civilian leadership into the concept of the operation and targeting process. What your staff does is not necessarily different in stability operations; the desired effects and assets used may be significantly different than for the offense and defense.

3-33. Use offensive lethal fires strictly in accordance with the rules of engagement (ROE). Use defensive fires to protect the force; ROE will still apply. Plan fires for base camp defense (if base camps are used). Ensure radar zones become an integral part of the force protection plan.

3-34. As you consider the use of Firefinder Radars to enhance force protection, remember that *all* acquisitions will already be a priority for action – use Critical Friendly Zones (CFZ) judiciously. Ensure Censor Zones are placed over friendly indirect positions – hold the FSO or targeting officer responsible for moving, confirming or canceling radar zones.

3-35. Consider dissemination of the fire support plan down through battalion, company and platoon to the leaders in charge of checkpoints, patrols and logistics convoys. Use aviation assets, if available to assist in executing the R&S plan.

3-36. Clearance of fires may include coordination with designated civilian organizations. Plan and rehearse clearance of fires drills. Establish liaison with allied military organizations to facilitate calls for fire and clearance of fires.

3-37. Consider using fires into uninhabited/unoccupied areas (possible free fire area) to demonstrate our deterrent capability (ROE dependent). The minimization of collateral damage will become a major constraint. Refer to the ROE frequently as FSCMs are established.

3-38. To demonstrate power projection, consider moving field artillery and mortar units within your zone, emplacing them, and pointing the tubes at positions that are selected to send a message to civilians and soldiers of both (all) sides.

SUPPORT OPERATIONS

3-39. Your fire support structure can support these actions by provide effective C2, observation posts, convoy operations, local security, sustainment operations and liaison capabilities. What your staff does (in terms of planning and preparing) is not necessarily different in support operations; the desired effects and assets used may be significantly different than for the offense and defense.

3-40. Non lethal fires will be the primary means of "attack" in support operations. Ensure the staff integrates the IO coordinator (if attached), PSYOPs rep, public and civil affairs reps, IEW staff officer, representatives from non-governmental and private voluntary organizations and possibly local civilian leadership into the concept of the operation and targeting process.

MOUT

3-41. The scheme of maneuver may include movement to contact or air assault (or a combination), breaching operations, a hasty or deliberate attack to seize objectives in a city or town, and providing fires for a follow-on mission – ensure the FSCOORD and FSO know to plan fires for the entire operation, not just the urban terrain phase.

3-42. The approval process based on the political sensitivity of engaging MOUT targets in certain situations can reside at command levels much higher than the requesting commander. This process, along with detailed information about the target and your intent must be completely understood by the targeting team.

TTP TIP

Target engagement in Somalia required National Command Authority (NCA) approval. Four essential elements of information had to be submitted to receive approval: military significance of the target, reliability of targeting information, extent of possible collateral damage, and, engagement weapon options. Additionally, extensive time and effort were spent researching and compiling required information concerning the characteristics and effects of munitions available in theater. IPB and target analysis were time consuming and tedious tasks, but they were necessities for the approval process from the tactical commander through the unified commander to the NCA.

3-43. Ensure the FSCOORD, FSO and battle staff have considered the following:

- What are the indirect fire ROE? What is on the restricted target list?
- Dissemination of maneuver scheme and fire support products down to the lowest level.
- Specifying who positions the COLTs/Strikers.
- What radar zones and cueing agents are required in the objective city?
- Where are the underground fuel and industrial storage tanks, gas distribution lines, gas storage tanks, and gas lines above ground?
- How has the enemy reinforced buildings?
- How will fire support and other personnel requesting fires determine 8-digit grid coordinates to targets in built-up areas?
- What is the general construction or composition of buildings, road surfaces, and barrier obstacles that require breaching? Which buildings have basements? (collateral damage issues)
- Which buildings/structures require large-caliber weapon/howitzer direct fire before assaulting?
- Where does tall building masking prevent indirect fire from engaging targets? Where are areas between tall buildings that prevent aircraft from engaging targets?
- Which sites provide the best observation posts (both friendly and enemy)? Which can be used for laser designators? Will an OH-58D be available for laser designation?
- Where to best position mortars, towed and SP artillery (both within and outside the city)? Which positions permit 6400 mil firing?
- Identify enemy mortar capability and radar zone requirements and limitations.
- Which areas of the city are most likely to be affected by the incendiary effects of detonating artillery and mortar rounds?

- Are targets outside the city to help block advancing enemy elements necessary, planned and triggers determined?

3-44. ROE and restrictions on collateral damage may dictate a reliance on precision munitions. If so, ammunition resupply should become one of your priorities. Give explicit guidance on the use of, or restriction on, illumination.

TTP TIP

Bosnia/Croatia. Any building floors above the 5th floor were dealt with very effectively by artillery in both the indirect and direct fire modes. Open areas were planned targets. Adjusting fire became problematic if the observer location was not carefully chosen.

Grozny. Indirect fire was used on the approach to the city and for capturing the outskirts. The majority of self-propelled artillery was attached to the maneuver elements because artillery could elevate where tanks and BMPs could not. Direct fire was more effective in minimizing rubbling than indirect fire.

BREACHING OPERATIONS

3-45. The FSCOORD and FSO will focus on executing SOSR-related EFSTs – your guidance, especially as it relates to suppressing and obscuring (when and where, for how long) is critical. Fires may have to execute other EFSTs while suppression and obscuration are ongoing – how will you prioritize EFSTs throughout the breaching operation? The FSCOORD should consider requirements for force protection at the breach site. Ensure the FSO checks the dimensions of CFZ(s) established – do they account for fairly static elements waiting to go through the breach and reorganizing beyond the breach?

3-46. Have the FSCOORD/FSO consider the following:

- Use scouts or other observers to set conditions at the breach site prior to arrival of the main body. Correctly identifying where to penetrate, suppress and obscure, and communicating that information quickly, is imperative.
- Plan target handoff with observers or scouts.
- Target for all wind speeds and directions.
- Position observers with redundancy.
- Plan for the shifting of priority of fires to the support force, then to the assault force. What are the triggers?
- Plan and fire smoke to cover movement of the support force.

PASSAGE OF LINES

3-47. Because of the greater range of field artillery systems, the transfer of fire support coordination responsibility may occur prior to the maneuver units' battle handover – ensure the FSCOORD has coordinated this event closely.

3-48. Information should be exchanged between the stationary and passing force's FSEs, including:

- Specific SOP information.
- Target lists and fire plans.
- Status of fire support assets.
- Attack guidance, target selection standards and engagement criteria.
- EFSTs and HPTs.
- FSCMs and maneuver control measures.
- Recognition signals.

- Information on obstacles.
- Positions for fire support assets.
- Meteorological and survey information.
- Automated database and electronic messaging information.
- Signal Operating Instructions.
- ROE and security measures in effect.
- Intelligence situation.

3-49. Ensure the FSCOORD considers the following for a **Forward Passage of Lines**:

- Use of smoke to obscure enemy observers or screen friendly movement.
- The stationary force supports the close battle while the passing force's artillery moves through.
- The FSE of the passing force sends a liaison to the FSE of the stationary force.
- The CFL is continually updated. FSOs must know the lead element's position continuously.
- Fire support assets should be positioned near the passage point without interfering with the passage of lines. Give priority of positioning to the passing force.
- Ensure passing force plans fires to support operations after the passage of lines.

3-50. Ensure the FSCOORD considers the following for a **Rearward Passage of Lines**.

- Use of smoke to conceal movement through passage points.
- Planned fires to support disengagement of forces and the deception plan (if part of the concept of operation).
- Ensure counterfire actions are planned and controlled by the stationary force.
- Give priority of positioning to the stationary force.
- The FSE of the stationary force sends a liaison to the FSE of the passing force.

AIRBORNE OPERATIONS

3-51. Conduct of fire support coordination distinguishes the initial assault phase from subsequent phases. During the assault phase, C2 is conducted from an airborne platform. The FSCOORD/FSO should review SEAD requirements in support of the air movement plan. Fire support planning and coordination functions are transferred to the ground force when the assaulting force commander and his FSO are on the ground and operational. FSE personnel should be cross-loaded in the landing plan so that loss of an aircraft does not completely disrupt fire support provided to the assaulting force.

3-52. At first, the assaulting force FSO is more concerned with close-in targets, while the airborne FSE focuses on deeper targets. Initial targeting intelligence is likely to come from national assets. Information links to the FSE must be thoroughly reviewed and understood by the targeting team. Fire planning for the ground tactical plan should consider EFSTs that support of the concept of operation and those that support defending the airhead.

AIR ASSAULT OPERATIONS

3-53. Not only should fire support be synchronized with the ground tactical plan, landing plan and air movement plan, but ammunition resupply procedures must be carefully integrated into the operation due to limited haul capacity.

3-54. Have the FSCOORD and FSO consider the following when planning fire support for an air assault operation:

- Will the landing zone be prepared with pre-planned fires? Is lethal SEAD required?
- Will false landing zones be utilized? If so, are false preparations desired?

- Where are the flight routes in relation to planned targets and delivery assets? Determine flight times, checkpoints, and code words.
- How are air defense systems being targeted? How will they be destroyed or suppressed? For how long (if suppression is called for)?
- What are the abort criteria?
- What A2C2 measures will be required?
- Will additional detect/assess or deliver assets be required from higher headquarters?
- Input for Air Mission Briefing.

3-55. Fire planning procedures, the targeting process, and targeting products are conducted/developed as for any operation with special consideration of the above.

Chapter 4
FIRE SUPPORT TECHNIQUES AND PROCEDURES

"I emphasized meticulous planning not simply because I thought it was the most effective approach, which it is, but because by taking that approach you enforce on your subordinates the same necessity. They have to learn every detail of the topography, every position, every soldier they will be facing. And once they do that, they will be able to decide rationally – not intuitively – on the steps they will have to take. They will make their decisions on the basis of knowledge. Experience has taught me that if you lay your plans in detail before you are under the stress of fighting, the chances are much greater that you will be able to implement at least the outlines of the plans despite the contingencies of battle."

General Ariel Sharon, *Warrior*, 1989

4-1. Synchronizing fires and maneuver is difficult enough even under the most favorable conditions. Its attainment becomes decidedly less likely if not properly planned and prepared for. This chapter presents you with procedures and techniques for better integrating fires with your scheme of maneuver during the MDMP. It also discusses the integration of targeting into both the MDMP and unit battle rhythm, and subsequently, gives you procedures for preparing for combat. The chapter concludes with procedures for the execution of fires and fire support-related actions during mission operations.

PLANNING

Military Decision Making Process

4-2. The MDMP per FM 5-0 (101-5) presents a process to properly integrate all BOS into a military operation. No changes are required of that process to achieve synchronization between fires and maneuver. What is required, though, is close attention to detail, especially by the staff, and a working knowledge of the inputs, actions and outputs presented under each of the MDMP steps below.

Mission Analysis

4-3. The FSE conducts the fire support portion of mission analysis as part of the battle staff. The following chart depicts inputs coming in to the fire support element, what actions they take, what they produce and *your impact*, **as depicted in the YOUR INPUT column**, on this step:

INPUTS TO FSE	ACTIONS	OUTPUTS	YOUR INPUT	NEXT ACTION
• Higher HQ OPORD • Facts from higher, lower, adjacent FSEs • IPB Products – see below • Facts from FS assets	• Understand higher OPORD • Organize & analyze facts • Identify specified and implied tasks • Translate status of FS assets into capabilities • Analyze effects of IPB on FS. • Develop Draft EFSTs	• FS portion of mission analysis brief • Recommend EFSTs	• **Demand detail in the mission analysis briefing** • **Approve or modify draft EFSTs** • **Give your intent** • **Give planning guidance, to include FS guidance, to the battle staff**	• Modify outputs based on Cdr's input • Issue WARNO • Begin COA development

TTP TIP

The top-down fire planning process begins with the issuance of the first warning order. The FSO should ensure that the approved draft EFSTs are part of the WARNO. By doing this, the FSO allows subordinate commanders and FSOs to begin framing their fire support plan not only within their own concept of operation, but in concert with the higher headquarters' fire support plan. Later in the planning and preparation process, subordinate FSOs offer refinement by requesting EFSTs not covered in the higher headquarters' plan.

IPB

4-4. This critical part of mission analysis involves input from the entire staff, including the FSO. While the S2 is piecing together the enemy situation, he ought to be getting help from each BOS. The FSO and DS Battalion S2 should be refining the situation template for enemy fire support systems; the ALO, ADA officer and Aviation LNO (if present) should be refining the SITTEMP for enemy air defense systems; etc. This will help ensure the best basis for the remainder of the MDMP and targeting process is available.

4-5. Situation templates are the start points for the targeting effort. Poor templates used later in the wargaming process, or during targeting meetings, will result in ineffective targeting. There is no limit (other than time) on the number of SITTEMPs that can be developed. Consider developing several templates for each enemy COA (under current procedures normally just one is developed). In this manner, you will be able to base your concept of the operation and targeting decisions on *how the enemy will look **when** you want to attack them.*

4-6. IPB products include a high-value target (HVT) list (those assets that the enemy commander requires to successfully complete his mission); enemy COAs (description and graphical depiction [situation template]); and event templates (SITTEMPs overlayed to determine NAIs – though this product will continue to be revised).

- Selected HVTs become high-payoff targets & EFSTs through wargaming and subsequent targeting meetings.
- Enemy COAs form the basis for friendly COA development as initial targeting decisions are recommended (what to attack with whom).
- Event templates form the basis for the initial R&S plan and are further developed during COA analysis.

Commander's Intent

4-7. Commanders Intent is described as a "*…clear, concise statement of what the force must do to succeed with respect to the enemy and the terrain and the desired end state. It provides the link between the mission and the concept of operations by stating the key tasks that, along with the mission, are the basis for subordinates to exercise initiative when unanticipated opportunities arise or when the original concept of operations no longer applies…*"

FM 101-5, *Staff Organization and Operations*, 31 May 1997

4-8. Long, vague intent statements detract from synchronization by "fogging-up" how you see maneuver and fires working together. If it's not clear to you, it's probably not clear to your S3, FSCOORD or FSO, either. There is no commander's intent for fires. There is but one intent statement per commander, nested in the higher headquarters' concept of operations, and providing the foundation for a comprehensive concept of operations that will be the basis for your subordinate commander's intent statement. Though you do not give a separate intent for fires, you provide guidance to the FSCOORD as discussed below.

Commander's Guidance for Fire Support

4-9. Guidance to the FSCOORD does not have to be any different than the guidance you give to your subordinate maneuver commanders: give him doctrinally stated **tasks and purposes**. A task for fire support describes a targeting effect against a specific enemy formation's function or capability. The purpose describes how this effect contributes to accomplishing the mission within your intent. Your initial planning guidance for fire support will become the basis for the concept of fires and the fires paragraph. Synchronization in your plan will depend largely on your ability to issue planning guidance to BOS representatives that cause them to develop integrated COAs.

4-10. Consider the following when deciding what to issue for fire support guidance:

- Preferred FS system for the engagement of HPTs. Though the HPTL has not been developed/approved yet, based on the S2's mission analysis briefing you may have an idea of what asset to use (lethal fires, non-lethal fires) and desired effects against potential HPTs.

- Guidance for fires. Consider stating the **task** as a targeting objective (disrupt, delay, limit, destroy, or other terms) against a formation (specific element or sub-element of the enemy) that provides the enemy a function (a capability of the formation that is needed for it to achieve its primary task and purpose). State the **purpose** in terms of how the targeting effect will benefit a friendly maneuver formation. Example: Disrupt the ability of SA-7s & 14s to engage lift helicopters from PZ Blue to LZ X-Ray **(task)** to allow the Air Assault Task Force to arrive at the LZ with at least 90% of its forces intact **(purpose)**.

TTP TIP

Under severe planning time constraints, another procedure to consider is to relate a specific task and purpose for each fire support asset (field artillery, mortars, close air support, naval gunfire, electronic attack, offensive IO…) to each "phase" of the operation. This also serves, then, as guidance for subordinate maneuver commanders and their staffs/FSEs to give them an idea of what fire support assets will be doing (for them) throughout the operation.

- Observer plan. Employment of COLTs or Strikers.

- Special Munitions – illumination use, smoke/WP, ground and air launched precision guided munitions, scatterable mines.

- Counterfire or counterbattery responsibilities you want the FSCOORD to plan for. (Must be synched with higher HQ or the counterfire HQ). Guidance on the establishment of critical friendly zones (CFZ) and call for fire zones (CFFZ). Guidance for the security of Firefinder radars (which forces at what time or event?).

- Suppression or destruction of enemy air defense guidance.

- Fire Support Coordinating Measures.

- Protected target list. ROE guidance.

- Engagement criteria. Guidance on size and type of units you want fires to engage at different points in the operation. (**Example** only: Counter-reconnaissance – FA can be used against single, stationary lightly armored vehicles; Main Battle Area – Do not plan on using FA against single vehicles unless a commander requests it.)

COA Development

4-11. As the battle staff begins the steps of COA development, the FSO must conceptualize how to integrate fires into the developing concept of operations. The start points for where and how the FSO recommends the allocation of fire support assets to each COA are the draft EFSTs and commander's guidance for fire support. The fire support endstate for this step of the MDMP is the development of draft fire support plan(s). The targeting process (Decide, Detect, Deliver, Assess) begins during this step of the MDMP (more on targeting in a subsequent section).

4-12. COA development should consider the use of all fire support systems, not just field artillery. All members of the targeting team should contribute during COA. Major movement and repositioning of fire support assets during the operation must be considered because they impact the tempo of the operation.

4-13. The following chart depicts fire support inputs, actions, and outputs for COA development and your role in this step:

INPUTS TO FSE	ACTIONS	OUTPUTS	YOUR INPUT	NEXT ACTION
• FS portion of mission analysis brief • Approved EFSTs • Commander's guidance for fire support	• Determine where to find and attack EFST formations • Identify HPTs in those formations • Quantify effects for EFSTs • Plan methods for EFSTs • Allocate assets to acquire • Allocate assets to attack • Integrate triggers with maneuver COA • Use battle calculus • Assist S2 in R&S plan development	For each COA develop a draft fire support plan that includes: • Concept of fires • Draft FSEM • Draft target list • Draft TSM or modified TSM • R&S Plan	**Approve or modify the draft EFSTs, as part of approving COAs, that will be analyzed in the next step.**	• Modify outputs based on Cdr's input • Issue WARNO • Prepare for and conduct COA analysis

EFSTs – Essential Fire Support Tasks
COA – Course of Action
FSEM – Fire Support Execution Matrix
HPT – High-Payoff Targets
R&S – Reconnaissance and Surveillance
TSM – Target Synchronization Matrix

Note: Examples of these and other planning products are in Appendix B.

Positioning Fire Support Assets and Observation Planning

4-14. General positioning requirements should be worked out in COA development – these will be refined during the wargame. Have the FSO obtain the position area overlay and/or Paladin axes developed by the DS battalion during its artillery IPB process to assist in coordinating position areas.

4-15. Terrain management considerations should include the following: Locations of delivery units, radars, TOCs and trains; movement routes and times (will be worked out in detail in the wargame); supply routes; axes for Paladin unit moves (if this procedure is followed).

4-16. Observation planning at brigade begins during this step and addresses those portions of the Decide step of targeting that deal with deciding who will observe the target and initiate fires (BRT, Striker, COLT, Radar, Subordinate Units…) and who will assess BDA (effects). Details of these decisions are worked out in the wargame. General positioning considerations to support the initial observation plan should be considered in COA development.

TTP TIP

As the number of EFSTs, and consequent HPTs, grows during the COA development step and you quickly exhaust the number of brigade-level collection assets to detect and assess those HPTs, consider task-organizing subordinate fire support teams under brigade control, at least for those phases prior to their expected use by battalions and companies. A battalion in reserve, or in a follow (or follow and support) mission may be best suited for this. The alternative is to task subordinate battalions to execute brigade EFSTs, and then be dependent on their observation plan for the execution of certain essential brigade tasks (normal procedure).

COA Analysis and COA Comparison

4-17. The wargame affords the staff with the tools to work out virtually all details of the concept of operation. It is also during the wargame that the remainder of the targeting decisions are finalized (pending your approval). As the staff conducts an action-reaction-counteraction drill to cause and respond to enemy acts, the targeting team addresses those actions, in accordance with the scheme of maneuver and concept of fires, that must be executed.

4-18. You can check the thoroughness of the wargame by ensuring the following questions can be answered *for each EFST*:

- What is the task and purpose?
- What effects do we want to achieve?
- Where will we first detect the target?
- Who will detect it?
- When do we expect to detect it?
- When is the latest we can detect it and still attack it to achieve the purpose?
- From where will we detect it?
- How will the detect asset get to its observation location (mode and route)? How long does it take to move there? When must it leave? Does it require security and log support? From whom, when and where?
- Is the asset detecting the target the same as the one tracking it and initiating fires on it? If so, what is the trigger to attack? If not, who is detecting, who is tracking, who is initiating fires, and how is the information passed amongst them?
- Is there a backup designated to detect, track and initiate fires? If so, ask the above questions about the backup. If not, why not?

- What asset/unit will attack the target?

- From where will they attack it? Do they have to move to attack the target? On what route, and for how long? When would they have to initiate movement?

- When will they attack the target? When is the latest they can attack the target and still achieve the purpose?

- Is there another asset designated to attacks the target (backup or secondary)? If so, same questions as above. If not, why not?

- Does the attack of the target necessitate any prerequisite actions for the maneuver staff? What are the details of the prerequisite actions?

- Who will assess effects? From where? When?

- How will BDA get reported and to whom? Who will make a re-attack decision? When is the latest desired effects can be achieved through re-attack and still fulfill the purpose of attacking the target?

- How will the results of attacking this target get disseminated to the maneuver unit whose scheme of maneuver is affected by the capabilities this target possesses? [Command and fire support channels?]

4-19. Depicted in the chart below are the inputs, actions and outputs for the FSE during COA analysis. Your input for this step is, as part of approving the wargame, modifying and/or approving the final drafts of the fire support plans – one per COA wargamed.

INPUTS TO FSE	ACTIONS	OUTPUTS	YOUR INPUT	NEXT ACTION

For each COA to be wargamed:
• Concept of fires
• Draft FSEM
• Draft target list
• Draft TSM or modified TSM
• R&S Plan
• Requested EFSTs from subordinates
	• Targeting decisions: finalize HPTL
	• Wargame fire support plan(s) against enemy COAs
	• Modify/refine inputs as required
	• Refine and test fire support plan
		Final drafts of:
		• Fires paragraph
		• Fire support annex to include:
		  • FSEM
		  • Target List
		  • Target overlay
		  • TSM or modified TSM
			• **Approve wargame if not a participant**	• Modify outputs based on Cdr's input
				• Prepare COA decision briefing

4-20. By this time in the planning process, subordinate units should have developed at least draft EFSTs in support of their concept of operation. Some of these subordinate units EFSTs are refinements to the EFSTs your headquarters sent in WARNOs. Other EFSTs are submitted for your staff's consideration because your scheme of fire support did not adequately support the subordinate unit's scheme of maneuver. The staff must integrate *all* EFSTs into the wargame and determine either how to execute each one, or, which EFSTs cannot be executed due to lack or resources. Subordinate commanders should be immediately notified which of their requested EFSTs are not in the higher headquarters scheme of fires (your staff should be informing you also for your approval).

COA Approval and Essential Fire Support Tasks

4-21. During this step, you are approving the fire support plan as part of the approved course of action. Inherent in your approval is the assignment of essential fire support tasks to subordinate or supporting units.

4-22. EFSTs for your plan have been under development and revision since mission analysis. By this time, they ought to be in the format in which they will appear in the OPORD. Within each phase of an operation, each EFST will be described in the sequence of planned execution using a TASK, PURPOSE, METHOD, EFFECTS format.

4-23. **TASK**: Describes the targeting objective that fires must achieve against a specific enemy formation's function or capability. These formations are high-payoff targets or contain one or more high-payoff targets. TASK is normally expressed in terms of Objective, Formation and Function.

- Objective. Targeting objectives such as disrupt, delay, limit or destroy (per FM 6-20-10). Other terms can be used *as long as you and the FSCOORD share the same understanding of those terms.*

- Formation. A specific element or sub-element of the enemy. Can specify a specific vehicle type or target category as long as the mutual meaning (between maneuver commander and FSCOORD/FSO is clear).

- Function. A capability of the formation that is needed for it (the enemy formation) to achieve its primary task and purpose.

4-24. **PURPOSE**: Describes the maneuver or operational purpose for the task. Normally described *in terms of the maneuver purpose*. This should identify as specifically as possible the friendly maneuver formation that will benefit from the targeting objective and describe in space and time what the objective will accomplish.

TTP TIP

TASK and PURPOSE Example:

Objective	Formation	Function
Disrupt the ability of	the inf. platoon at point of penetration	to place effective direct fire against the breach force…

…to allow a mechanized team to breach the obstacle without becoming decisively engaged by the infantry platoon at the point of penetration.

4-25. **METHOD:** Describes *how* the task and purpose will be achieved. It ties the detect function to the deliver function in time and space and describes how to accomplish the task. Normally described in terms of Priority, Allocation and Restriction. It is from the method of an EFST that subordinate units, including field artillery and target acquisition, get (some) of their essential tasks (Essential Field Artillery Tasks for artillery units).

- Priority. For detection assets, it assigns priorities for NAIs, TAIs, engagement areas, and/or HPTs to find. For deliver assets, it assigns the priority of which HPT that system will primarily be used against.

- Allocation. For both detection and deliver assets, it describes the allocation of assets to accomplish the EFST.

- Restriction. Describes constraints – either requirements to do something; or prohibition on action. Normal considerations include ammunition restrictions and fire support coordinating measures.

TTP TIP

METHOD Example: Priority observer for AB0027 (inf. Platoon at point of penetration; an HPT) is COLT 2 from OP1, NFA of 200m radius established. Backup observer from TF 1-22. FA priority is AB0027 when requested. Sustained rate of fire until ordered to lift fires by COLT 2 , commander mech team, or commander TF 1-22. No DPICM, No ILLUM.

Note: Commanders should look for conflicts between FS systems when multiple EFSTs are being worked.

4-26. **EFFECTS:** Quantifying the successful accomplishment of the task – provides a guide to determine when we are done with the task. One measure of effects is to determine if the purpose was met. If multiple delivery assets are involved, it helps clarify what each must accomplish. Effects determination also provide the basis for the assess function of targeting and contribute to the decision of whether to re-attack the target.

TTP TIP

EFFECTS Examples:

- Enemy infantry platoon suppressed until at least the assault force has passed through.
- 1/4 of vehicles and 1/2 of enemy infantry platoon personnel destroyed.

4-27. The FSE will use the inputs and actions depicted below to produce outputs for your consideration. *Your approval of the course of action indicates you are satisfied with the degree of synchronization between maneuver and fires that the plan contains.*

INPUTS TO FSE	ACTIONS	OUTPUTS	YOUR INPUT	NEXT ACTION

• Fires paragraph
• Fire support annex to include:
  • FSEM
  • Target List
  • Target overlay
  • TSM or modified TSM
	• Approval briefing
	• Fire support plan briefed as part of each COA
	• FSCOORD may present analysis as part of the staff
		• Commander modifies or approves COA
		• Issue WARNO
		• Finalize fire support products
		• Issue OPORD as part of the staff
		• Conduct fire support backbriefs
			• **Demand detail in the COA approval briefing**
			• **Approve/modify fire support plan as part of the approved COA**
				• Manage refinement
				• Prepare OPORD and briefing products
				• Conduct rehearsals

Orders Briefing

4-28. The primary audience for the fire support portion of this briefing is the commanders or supervisors of those units/individuals responsible for executing EFSTs. The following should be considered during the fire support portion of the OPORD briefing:

- Scheme of fires (includes logical sequence of EFSTs)
- Clearance of fires procedures (if different than SOP)
- FSCMs
- Cutoff times for target refinement and battalion requests for brigade planned fires
- Rehearsal instructions

- *Always include in your OPORD confirmation brief a review of EFST responsibilities*

The Targeting Process and the MDMP

4-29. The targeting process is not a distinct series of actions that occur exclusive of the MDMP. Instead, the targeting process (Decide-Detect-Deliver-Assess) begins as DECIDE "decisions" are made while the staff is conducting the MDMP. During the MDMP, the DECIDE function of the targeting process is to fires what COA development is to maneuver – both are addressing "who kills who". Since the battle staff = the targeting team, IF the staff conducts the MDMP properly, there is no need during the MDMP to conduct a separate targeting meeting – the results of what the targeting meeting would give you are already being developed as the plan is being built. The chart below depicts how the targeting process fits within the MDMP and the unit's battle rhythm. Targeting during mission execution is covered in more detail later in this chapter.

MDMP Step	**Receipt of Mission**	**Mission Analysis**	**COA Development**	**COA Analysis**	**COA Approval & Orders**	**Rehearsals**	**Execution & Assessment**
Targeting Process Function	**Assemble targeting team[1]**	**Initial DECIDE[2]**	**Draft DECIDE[3]**	**Refine DECIDE[4]**	**DECIDE function continues[5]**	**Possible Targeting meeting[6]**	**DETECT DELIVER ASSESS[7]** **Targeting meeting[8]**
Targeting Products		**HVTs Draft EFSTs**	**Draft FSEM Draft HPTL Draft TSM Draft R&S Plan**	**FSEM HPTL TSM R&S Plan**		**Refined: FSEM HPTL TSM R&S Plan**	**Refined: FSEM HPTL TSM R&S Plan**
Unit Battle Rhythm	**Plan**	**Plan**	**Plan**	**Plan**	**Plan**	**Prepare & Plan[9]**	**Execute & Plan[10]**

Notes: [1] **Targeting team = battle staff (include non-lethal reps; reference Chapter 2)**

[2] **The initial DECIDE factors developed here are based on enemy COA development, draft EFSTs, other specified and essential tasks, and status of detect and deliver assets.**

[3] **Draft DECIDE factors should address what, how, when and where to detect an EFST formation; what, how, when and where to attack that EFST formation; and what, how, when and where to assess the attack on that EFST formation. Draft HPTs are developed to clarify the EFST.**

[4] **Refined DECIDE factors should address the what, how, when and where to detect, attack and assess each HPT associated with an EFST.**

[5] **The decisions made up to the point of COA approval and the production of an OPORD form the basis for change for targeting products. Rehearsals, friendly and enemy situation updates, subsequent targeting meetings, etc. all can modify previous decisions.**

[6] **If the time between OPORD dissemination and rehearsals allows for the friendly, and especially the enemy, situation to change, or as part of your unit's daily battle rhythm (see note 9), revisit previously made targeting decisions during a targeting meeting.**

[7] **During execution, the DETECT, DELIVER and ASSESS functions of targeting are conducted in accordance with the concept of operation (as modified by the existing situation) and the commander's intent in a synchronized manner with the scheme of maneuver.**

[8] **Normally, daily and/or event-driven targeting meetings are conducted during execution.**

[9] **Refinements to the current plan continue until the mission is accomplished.**

[10] **During execution, planning continues on branches and sequels to the base plan (tied in with note 8); or, a new mission is received and the MDMP (with its own embedded targeting process) initiated.**

PREPARATION

4-30. Once a synchronized plan has been developed, the unit focuses on the preparation phase of operations. Two key events occur here that have the capability of adding to the level of synchronization between maneuver and fires for the upcoming mission: the combined arms rehearsal and the process of target refinement.

Combined Arms Rehearsals

4-31. The maneuver unit headquarters normally conducts the combined arms rehearsal after subordinate units have issued their OPORD/FASP. This rehearsal ensures that the subordinate units' plans are synchronized with those of the other units in the organization and that those plans will achieve the intent of the higher commander. A f*ire support rehearsal should be conducted **prior to** the combined arms rehearsal and if possible should include the maneuver S2 and S3 and other members of the targeting team as appropriate.*

4-32. Key fire support points that should be addressed during the combined arms rehearsal include:

- Responsibilities and actions for the execution of EFSTs, with triggers.
- Positioning and movement plans for fire support assets, with triggers.
- Verification of the R&S plan to support targeting and the target acquisition plan to support counterbattery fire, to include radar zone management, with triggers.
- Current and planned fire support coordinating measures, with triggers for changing.
- CAS and JAAT actions, with A2C2 measures and ACA, SEAD and other enablers.

TTP TIP

Have the individual(s) responsible for executing the Method of EFSTs participate in the rehearsal. It detracts from synchronization if, for example, the S2 depicts an enemy action that triggers an attack by fires and the FSO explains that COLT 1 has observed the action, will initiate planned artillery fires, and will assess whether x effects were achieved. The FSO is not executing the task, therefore he should not be practicing it at the rehearsal.

Target Refinement: The Top-Down Fire Planning, Bottom-up Refinement Process

4-33. Refinement is the second half of the top-down fire planning process (top-down planning, bottom-up refinement). It involves refinements to the brigade's essential fire support tasks and refinements to the targeting data (mainly location) of those EFSTs.

4-34. A battalion (task force) must clearly understand not only the brigade concept of fires and how it is synchronized to support brigade maneuver but also the battalion's role in the brigade scheme of fires so that the battalion can execute its portion. The battalion must also develop its own concept of fires involving EFSTs assigned from brigade and targets to support the battalion close/direct fire fight. The battalion scheme of fires is (including both brigade and battalion targets) is passed down to the companies where another level of refinement is conducted. After the companies conduct bottom-up refinement and forward their fire support requests to battalion, the battalion consolidates, resolves duplications and forwards the battalion concept of fires and target refinements to brigade.

4-35. The following chart depicts brigade and battalion roles in this process.

Brigade Role in Fire Support Planning	Battalion Role in Fire Support Planning
• **Synchronize the brigade concept of fires with brigade maneuver** • **Develop brigade scheme of fires and assign EFSTs to subordinates** • **Provide fire support for battalion close/direct fire fight** • **Integrate refinements from subordinates** • **Integrate movement of fire support assets into the scheme of maneuver**	• **Understand the integration of brigade maneuver and fires** • **Understand battalion role in the brigade scheme of fires/maneuver** • **Execute assigned EFSTs** • **Develop battalion concept and scheme of fires** • **Integrate and refine brigade EFSTs for close/direct fire fight** • **Plan for the synchronization of battalion mortars with the scheme of fires and their movement with the scheme of maneuver** • **Bottom-up refinement from companies** • **Forward battalion concept of fires and target refinements to brigade**

4-36. Initial targeting decisions are based on templates that must be refined through execution of the R&S plan and analysis of reported intelligence data. As more accurate information on the enemy is obtained, target lists must be updated and disseminated. Target data refinement considerations include:

- Changing target locations, but not the purpose of the target. The purpose of the target was established during the MDMP and is linked to the EFST for which that target was developed. Changing the purpose implies a new EFST and involves commander, or at least S3, approval.

- Enforce target refinement cutoff times. This does not preclude the attack of targets of opportunity, but it does allow for proper positioning of fire support assets based on the location of planned targets assigned to those assets and allows for the most accurate location to be disseminated to the delivery assets – a critical factor when fires are initiated using a target number vice grid coordinate.

EXECUTION

4-37. During a battle, the positioning of the FSCOORD and FSO is dependent on your location (normally the FSCOORD is with you) and whether you have established a TAC CP (normally the FSO will accompany the S3 at the TAC). Regardless, during execution they should be able to tell you at any given time, much like a subordinate maneuver commander, the status of fire support assets and what fires are doing. The following paragraphs discuss procedures for common fire support-related activities that occur during mission execution.

Focusing Fires and the Brigade and Task Force Fights

4-38. As EFSTs are determined during the MDMP using a top-down planning, bottom-up refinement process, fires are integrated into the scheme of maneuver. If the staff has thoroughly wargamed possible enemy and friendly courses of action, the resultant fire support plan is focused. That is, it provides the effects desired by the commander when and where he wants them to help accomplish the mission. During execution, the only thing that should be allowed to desynchronize the plan is (are) enemy actions not previously considered. Since this will almost always occur, you must have a system in place to immediately make D3A decisions, disseminate them and execute them violently. Fighting the enemy (not the plan) in accordance with your guidance provides focus.

4-39. In terms of a "brigade versus battalion fight", there is only one fire plan. The top-down plan developed and refined during the MDMP and preparation phase should incorporate EFSTs supporting brigade and battalion (and company) schemes of maneuver. As (if) fires shift from deeper to closer targets, execution responsibility tends to shift from brigade to battalion. In executing the fire plan, brigade ***does not hand fires off*** to subordinate headquarters, it ***hands off the responsibility for executing*** certain EFSTs to subordinate headquarters. In this manner, brigade fires remain synchronized with brigade maneuver – while still supporting subordinate maneuver units. The expected conflict between simultaneously attacking targets the battalion wants attacked by fires and targets the brigade wants attacked by fires must be planned for and wargamed in the MDMP.

Clearance of Fires

4-40. Maneuver commanders clear fires. Normally this is delegated to their main command posts and executed by the battle staff under the lead of the FSE. *In either analog or digital operations,* ***silence is not consent*** *– clearance of fires requires positive action*.

4-41. The first step in effective clearance of fires is the use of maneuver control measures. Any time you can procedurally depict ownership of land the better for clearing fires. If no boundaries are established, all fires short of the Coordinated Fire Line (if established) must be cleared by the higher headquarters instead of the headquarters closest to the fires. While clearing fires is potentially more complicated in distributed, non-linear operations, serious consideration should be given for establishing areas of operation for each subordinate maneuver unit, consistent with the scheme of maneuver.

4-42. Proper use of FSCMs also facilitates the clearance of fires. Permissive measures (if positioned correctly and disseminated to all higher, adjacent and subordinate units), such as CFLs and FFAs, offer the opportunity for safe responsive fires on targets of opportunity. The size of restrictive measures (NFA, RFA) should be verified to preclude unwarranted delays for otherwise safe fires. The next section contains more information on managing FSCMs.

4-43. A procedure to consider in certain circumstances is pre-clearing fires. In some very specific instances, units can clear fires during the planning phase. Two such instances are: (1) fires into a planned call for fire zone (CFFZ) resulting from a radar acquisition from that planned CFFZ - the CFFZ must have been planned in advance and published in the radar deployment order; and (2) fires on preplanned target, with a definable trigger, against a specific enemy, and according to the scheme of fire support.

4-44. When fires are requested that are not pre-cleared or allowed by a permissive fire support coordinating measure, they must be positively cleared. This procedure can (should!) be a battle drill in command posts.

4-45. In an analog TOC, recommend you do not clear fires off the situation map – it will seldom be accurate enough to guarantee the safety of friendly soldiers. Calls for clearance should originate from the requesting maneuver force (probably made by the FSO) over both the fire support net and either the command or O&I net. The TOC responsible for clearing fires should make an "Attention in the TOC" announcement, read the grid of the target, and get an answer from each BOS representative that no friendlies of that BOS are in danger. The TOC then reports back over both nets that the target is clear.

TTP TIP

If the clearance of fire drill takes too long (a subjective call on your part based on the tempo of the operation) you may have to re-clear that target to fire because friendly forces could have moved into the target area after or during the initial clearance.

4-46. In a digital TOC with situational awareness maintained through Force XXI Battle Command Brigade and Below (FBCB2) or similar technology, clearance of fires must be addressed the same as above. Unless you can guarantee that every friendly element (including vehicles and dismounts) in your zone has electronically provided their location (not just the FBCB2-equipped, organic units), a drill similar to that discussed for analog operations should be conducted.

4-47. The Advanced Field Artillery Tactical Data System (AFATDS) can both assist and hinder in clearance of fires procedures. It assists by automatically sending a digital request for coordination (clearance) when fires are requested cross-boundary or when an FSCM is violated by a request for fires. The clearance drill must still be accomplished with the responsible TOC, then the results transmitted digitally to the originator. AFATDS can hinder rapid clearance of fires by automatically intervening on calls for fires based on improper, or inaccurate, intervention criteria and safe distance radii relating to FSCM establishment. Ensure your FSO reviews these data closely.

Managing Fire Support Coordinating Measures

4-48. The purpose of this section is to present you with tactical considerations for the placement and size of FSCMs you approve. For FSCM definitions and graphics, see FM 6-20-40.

4-49. Coordinated Fire Line Considerations. There is no requirement to place the CFL on identifiable terrain. Use phase lines as CFLs only if the placement makes sense based on the targets you want to attack with surface fires. If the CFL is placed beyond the concentration of enemy mortars that comprise an EFST, then every Firefinder radar detection will have to be cleared before counterfire can be brought to bear (unless the mortars are in a pre-cleared CFFZ). Friendlies can operate beyond the CFL – they should be protected, though, with NFAs or RFAs and their movements strictly controlled. Cover the trigger(s) and changing of CFLs at combined arms rehearsals to synchronize subordinate commander's scheme of maneuver with targeting team efforts.

4-50. No Fire Area and Restrictive Fire Area Considerations. The size of these areas should be just large enough to safeguard the force, element or individual for which they are established. An NFA with a 1km radius established over a COLT position offers a "buffer zone" about five times larger than it needs to be to protect the COLT (munition dependent). With AFATDS, if that observer buffer zone is "touched" by the artificial criteria of the input target buffer zone (a radius around the target that approximates a particular munition's effects), the mission will be delayed for coordination. As discussed in the clearance of fires section, have the FSO closely review and validate NFA/RFA size as well as target buffer zone inputs for the various munitions.

4-51. Airspace Coordination Areas. Formal ACAs may be recommended at your level, but the Air Control Authority (also ACA) approves them at the Air Operation Center. Informal ACAs are discussed in the section on CAS integration.

Counterfire and Radar Zone Management

4-52. First and foremost - *if no radar zones are established, Firefinder radars will still acquire targets* (if it is cueing) and will pass the intelligence to the artillery TOC (it can be converted to a call for fire and fired at that time). All the establishment of critical friendly zones (CFZ) and call for fire zones (CFFZ) does is change the format of the Firefinder report to a call for fire and place a higher priority on it (so IFSAS and AFATDS handle it as soon as its received). Still, the proper establishment of radar zones can expedite the reactive counterfire process. See Appendix F for more information on radar zones.

4-53. Consider these factors when establishing zones:

- In the offense, are breach sites and areas directly leading in and out covered by CFZ?
- Can assembly areas, assault and attack positions get CFZ coverage?
- Will a CFZ be placed on the objective(s) during consolidation?
- Are support by fire positions covered with CFZ?
- Are attack helicopter battle positions covered with CFZ?
- In the defense, are battle positions and reserve assembly areas covered with CFZ?
- Which command posts receive CFZ coverage?
- In stability and support operations, what command posts, positions and facilities get CFZ coverage?
- Are CFFZ established around known/templated locations as they exist when firing is expected from them? (as opposed to a SITTEMP portraying enemy indirect assets prior to their estimated use on the battlefield). This provides another opportunity to "overlay the overlays".

4-54. Fire supporters are taught that commanders approve radar zones; they, however, are the ones who ought to be recommending where and when they are established. The possible de-synchronization with radar zone management is that they are recommended in maneuver TOCs, approved by the brigade commander, yet planned for and formalized in an order at the DS battalion TOC. The radar deployment order is a Tab to an Appendix (Field Artillery Support Plan) to an Annex (Fire Support) to your OPORD. Consider having the personnel responsible for putting it together present with your staff during as much of the MDMP as possible.

4-55. If the division commander has assigned you part of the division's counterfire fight and has resourced you with a Firefinder radar, another aspect of radar zone management deserves a few comments. Your counterfire plans should be made in conjunction with the division counterfire plan. The establishment of a common-sensor boundary (done by division) delineates where the brigade picks up reactive counterfire responsibility. As your radar deployment order is being developed, the DS battalion TOC through Divarty, and your FSO through division FSE, should be keeping higher informed of what the brigade plan is and where and when you are relying on higher for assistance (for example, getting Q-37 coverage while your radar is moving). Have your S2 and FSO work particularly hard with the DS battalion S3 to work out the flow of Firefinder acquisitions (ensure they do not stop at the FA TOC) and all-source intel coming into your TOC (ensure counterfire targeting intelligence gets passed to the "counterfire headquarters").

A2C2 and CAS Integration Considerations

4-56. A2C2 procedures and measures are covered in detail in FM 100-13-1 and in general in FM 6-20-40. If you have air assets task organized, your "A2C2 element" will not only have to deconflict air control measures with division, but also with your scheme of fires to provide uninterrupted air and fire support. (Another opportunity to overlay the overlays.)

4-57. Four standard procedures exist to integrate CAS and artillery fires with a minimum of disruption: Lateral, Altitude, Time, and, Altitude and Lateral separation. These are informal airspace coordination measures. If properly planned and coordinated, CAS should not cause indirect fire support to stop, and vice versa.

- Lateral separation. Used to attack two targets that are close together, one with CAS and the other with artillery. The forward air controller obtains gun-target line information, and passes this to the aircraft to prevent it from crossing the line. This procedure can also be expanded to separate portions of engagement areas for specific weapons.

- Altitude separation. Used to attack the same target. The maximum and minimum ordinates are passed to the forward air controller so that aircraft stay above/stay below the trajectory of the artillery rounds.

- Time separation. Used to attack either the same target with different means or several targets in the same engagement area. Indirect fires are controlled by an "At My Command" method of control; CAS is controlled by instructions in the 9-line brief. Indirect fires are dependent on CAS and fired when the airspace is clear until the next sortie arrives.

- Altitude and Lateral separation. Used to attack several targets within a relatively small area. Also used to provide SEAD fires when the CAS target is between the artillery gun positions and enemy ADA positions. Combines the techniques discussed under the separate headings above.

The Targeting Process during Mission Execution

4-58. During the execution phase of operations, the battle staff (targeting team) is continually assessing the current situation, tracking decision points, possibly preparing some type of update briefing for the commander, and looking towards the future (whether that is 6 to 36 or more hours depends on the level of command and situation). The targeting process allows you to extend the MDMP throughout your operation by giving you a forum to reconsider "who kills who" decisions and modify or initiate actions to implement those decisions. The process normally occurs within the setting of (informal) targeting meetings.

Targeting Meetings

4-59. The targeting meeting is a critical event in the unit's battle rhythm. It focuses and synchronizes the unit's combat power and resources toward finding, tracking, attacking and assessing HPT. The meeting:

- Verifies and updates the HPTL
- Verifies, updates and re-tasks available collection assets for each HPT
- Allocates delivery systems to engage each target
- Confirms the assets tasked to verify the effects on target after it has been attacked
- Provides a forum for target attack nominations by joint systems
- Synchronizes lethal and non-lethal actions (to include IO)

4-60. To be effective, the following personnel should attend the targeting meeting:

- Brigade Commander (when available)
- Brigade XO (runs the meeting)
- FSCOORD
- Brigade S3 (runs the meeting in the XO's absence)
- Brigade S2
- ALO
- IO Coordinator (if present)
- Brigade S4
- Brigade Engineer (Assistant Bde Engineer/Engineer LNO in his absence)
- Brigade ADA Officer (Assistant Bde ADAO/ADA LNO in his absence)
- Aviation LNO
- Brigade S3 Air

- MI Company Commander
- BRT Commander and Striker Platoon Leader
- Chemical Officer
- PSYOP Team Leader
- Civil Affairs Team Leader
- FSO
- Targeting Officer
- DS FA Battalion S2 (if available)
- SJA

4-61. The timing of the targeting meeting is critical. It must be effectively integrated into the unit's battle rhythm and nested in the higher headquarters' targeting cycle to ensure that the results of the targeting process can be implemented. Thus task organization changes, modifications to the R&S plan, ATO nominations, changes to the HPTL and specified EFSTs all must be made with full awareness of time available to prepare and execute. While the time-focus for brigade targeting meetings is normally 24-36 hours out, certain targeting decisions, such as ATO nominations, must be planned for in conjunction with the theater or Corps ATO cycle – which is usually based on a 72-hour cycle.

Preparation for the targeting meeting

4-62. A key to the successful conduct of the targeting meeting is preparation. Each representative must come to the meeting prepared to discuss available assets, capabilities, limitations, and battle damage assessment (if applicable) related to their BOS. This means participants must conduct detailed prior coordination and be prepared to provide the following inputs and/or information with them as described below.

4-63. The S3 section provides information on:

- Current friendly situation
- Maneuver assets available
- Current combat power
- Requirements from higher headquarters (includes recent FRAGOs or taskings)
- Changes to commander's intent
- Changes to task organization
- Planned operations

4-64. The S2 section provides information on:

- Current enemy situation
- Current R&S plan
- Planned enemy courses of action tailored to the time period discussed
- Collection assets available and those that must be requested from higher

4-65. The fire support section provides information on:

- HPTL, TSS, AGM or a consolidated matrix (e.g., TSM)
- Fire support assets available
- Proposed HPTL for the time period discussed and corresponding changes to FSCMs

4-66. Other staff sections provide information on:

- BOS asset availability and capabilities
- The integration of their assets into targeting decisions
- Capabilities and limitations of enemy assets within their BOS

Conducting the targeting meeting

4-67. The XO (or S3) is responsible for keeping the meeting focused. He opens the targeting meeting by conducting a roll call, followed by a brief explanation of the purpose.

He describes the agenda and specifies the time period to be addressed. He is the arbitrator for disagreements that arise (unless the Commander is present) and constantly ensures all participants are actively involved, staying on track with the stated purpose and agenda, and are not conducting "sidebar" discussions during the meeting.

4-68. Maximum participation by the staff is essential. Staff members and BOS representatives must share their expertise and respective staff estimate information on the capabilities and limitations of both friendly and enemy systems. They should also consider providing redundant means, if feasible, to detect, deliver and assess targets.

4-69. An example agenda for a brigade (informal) targeting meeting is:

- The S2 provides an intelligence update.
    1. Briefs the enemy situation
    2. Reviews the current collection or R&S plans
    3. Provides battle damage assessment of targets engaged since the last targeting meeting and the impact on the enemy course of action
    4. Provides an analysis of the enemy's most probable courses of action and locations for the next 24-36 hours (possibly projecting out 72 hours for targets subject to attack through ATO nominations)
    5. Recommends changes to the PIR for the commander's (if present) approval, or review by the battle staff

- The S-3 provides a friendly situation update.
    1. Summarizes the current tactical situation; including new requirements.
    2. Informs on the status of available assets (combat power)
    3. If the commander is not present, briefs any particular guidance from the commander and changes to his intent
    4. Briefs planned operations during the period covered by the targeting meeting

- The FSCOORD or FSO provides an update on fire support.
    1. Reviews the current TSM (or other targeting products)
    2. Reviews status of FS assets
    3. Reviews approved preplanned air requests for the period and those planned for the next two ATO cycles (this may be briefed by the ALO) – normally done in 24-hour increments
    4. Presents a proposed HPTL with locations for the (commander's) staffs concurrence and refinement
    5. Recommends ICW the ALO changes to the working preplanned air requests and nominations for the planning cycle.

- Once everyone understands what the enemy will most likely be doing for the next 24-36 hours, what the friendly plan is, and what targets have been recommended (approved if the commander is present) as HPT, the XO (or S3) completes the D3A process for those HPTs.
    1. *Decide* and prioritize **what detection** assets are responsible for finding the target and triggering attack.
    2. *Decide* **where** you will find the target, trigger its attack, and attack the target.
    3. *Decide* **what delivery** means will be used to attack each target and the effects desired.
    4. *Decide* **when** you will attack each target.
    5. *Decide* and prioritize **what** detection assets will **assess** effects on the target, from where they will do so, and when the information must be obtained by.
    6. *Decide* re-attack criteria and necessary actions

- After all D3A decisions have been made, **obtain the commander's approval**. Then prepare FRAGOs with new tasks to subordinate units and EFSTs. Rehearse if time permits. Begin (continue) tracking targeting actions using the products (TSM…) your unit has adopted.

Appendix A

Fire Support Terms and Definitions

ESSENTIAL FIRE SUPPORT TASK.

A-1. A task for fire support to accomplish that is required to support a combined arms operation. Failure to achieve a EFST may require the commander to alter his tactical or operational plan. A fully developed EFST has a task, purpose, method and effects. The **task** describes what targeting objective (delay, disrupt, limit or destroy) fires must achieve on an enemy formation's function or capability. The **purpose** describes why the task contributes to maneuver. The **method** describes how the task will be accomplished by assigning responsibility to observers or units and delivery assets and providing amplifying information or restrictions. Typically the method is described by covering three categories: priority, allocation and restrictions. **Effects** quantify successful accomplishment of the task.

ESSENTIAL FIELD ARTILLERY TASKS.

A-2. A task for the field artillery that must be accomplished to achieve an EFST. A fully developed EFAT has a task, purpose, method and effects. The **task** describes the effects of fires against a specific enemy formation (s) (effects of fires = suppress, neutralize, destroy, screen, or obscure). (Note: Fire FASCAM/SEAD are special cases.) The **purpose** is a summary of the task and purpose from the EFST. The method describes how the task will be accomplished by assigning responsibilities to the Field Artillery batteries, survey and BN TOC. Typically the **method** is described by covering three categories: priority, allocation and restrictions. Priority provides the batteries with POF and priority of survey. Allocations include movement triggers, routes, position areas, azimuths of fire, targets (priority and FPFs), and radar zones. Restrictions cover FSCMs and survivability movement criteria. **Effects** are a quantification of the FA task and positioning of FA units.

CONCEPT OF FIRES.

A-3. The logical sequence of EFSTs that integrated with the scheme of maneuver will accomplish the mission and achieve the Commander's Intent. Allocates in broad terms the fire support assets to achieve the EFSTs. The concept of fires is the basis of the fires paragraph.

SCHEME OF FIRES.

A-4. The detailed, logical sequence of targets and fire support events to find and attack the high payoff targets. It details how we expect to execute the fire support plan in accordance with the time and space of the battlefield to accomplish the commander's essential fire support tasks. The products of the FS annex: FSEM, target list/overlay and/or a modified target synch matrix articulate the scheme of fires.

RISK ESTIMATE DISTANCES.

A-5. The distance in meters from the intended center of impact at which a specific degree of risk and vulnerability will not be exceeded.

Appendix B

Examples of Fire Support Products

HIGH PAYOFF TARGET LIST (HPTL).

Phase/Event: Security Zone	
Priority	**Target**
1	COPs in main attack zone
2	2S1 and 2S19
3	2S6, SA9, SA13
4	Mortars in main attack zone
5	Regimental CP
Critical Notes: High payoff targets should be defined as accurately as possible. In this example, COP targets have been further defined to only those in the zone of the main attack. Priority #2 could pose problems. Are both of these systems the same priority throughout this phase? If non-Firefinder assets are allocated to detect them, which system is allocated for first? The ADA systems in #3 also can cause a lack of focus. Are all SA13s, regardless of location, an HPT to us? Consider only those that can affect your air axis / air corridor.	

ATTACK GUIDANCE MATRIX (AGM).

Phase/Event: Attack through the security zone				
HPT	**When**	**How**	**Effect**	**Remarks**
COPs in Main Attack zone	P	DS Arty	N (15 mins)	Plan to fire until task accomplished
2S1 and 2S19	A	R Arty	N	IAW CFZs
2S6, SA9, SA13	A, P	DS Arty	S	"P" IAW SEAD plan
Mortars in main attack zone	A	R Arty	N	IAW CFZs
Regimental CP	A	DS Arty, EW	N	
Legend: I = Immediate (priority over all non-immediate missions) A = As acquired P = Planned (put into a schedule to be fired later)		S = Suppress N = Neutralize D = Destroy	These terms still require amplification	

TARGET SELECTION STANDARDS (TSS).

HPT	Timeliness	Accuracy
COPs in main attack zone	3 hrs	100m
2S1 and 2S19	30 min	150m
2S6, SA9, SA13	1 hr	200m
Mortars in main attack zone	30 min	150m
Regimental CP	4 hrs	500m
Notes: Valid targets must be reported to the *delivery system* within the designated timeliness criteria and meet the target location error goal under accuracy in order to be attacked. Commanders can override this criteria at any time, but this gives the targeting team guidance to execute in the absence of further orders.		

FIRE SUPPORT EXECUTION MATRIX - EXAMPLE 1

Appendix 1 (Scheme of Fires) to Annex F (Fire Support) to OPORD 98-_____ MSN#_____

BRANCH	GO TO #____		GO TO #____		GO TO #____		GO TO #____		GO TO #____	
TRIGGER	DAY	LIM VIS	DAY	LIM VIS	DAY	LIM VIS	DAY	LIM VIS	DAY	LIM VIS
FS EVENT										
OBS/ EXECUTOR	PRIMARY	ALTERNATE	PRIMARY	ALTERNATE	PRIMARY	ALTERNATE	PRIMARY	ALTERNATE	PRIMARY	ALTERNATE
TASK	ATTK GUID	WHAT	ATTK GUID	WHAT	ATTK GUID	WHAT	ATTK GUID	WHAT	ATTK GUID	WHAT
PURPOSE	EFFECT	FUNCTION	EFFECT	FUNCTION	EFFECT	FUNCTION	EFFECT	FUNCTION	EFFECT	FUNCTION
	DISRUPT		DISRUPT		DISRUPT		DISRUPT		DISRUPT	
	DELAY		DELAY		DELAY		DELAY		DELAY	
	LIMIT		LIMIT		LIMIT		LIMIT		LIMIT	
	SUPPRESS		SUPPRESS		SUPPRESS		SUPPRESS		SUPPRESS	
	OBSCURE		OBSCURE		OBSCURE		OBSCURE		OBSCURE	
	SCREEN		SCREEN		SCREEN		SCREEN		SCREEN	
	DESTROY		DESTROY		DESTROY		DESTROY		DESTROY	
WPN/ MUNITIONS	UNIT(S)	MUNITION(S)	UNIT(S)	MUNITION(S)	UNIT(S)	MUNITION(S)	UNIT(S)	MUNITION(S)	UNIT(S)	MUNITION(S)
FSCM										
RADAR ZONES										

FIRE SUPPORT EXECUTION MATRIX - EXAMPLE 2

PHASE	I-DEEP FIGHT			This line corresponds to maneuver phases
TRIGGER/DP	CRPs AT NAI 4	CAS TOT--2 MIN	N. MB MRC AT AN9001	This line is used to provide the trigger to execute the FS event or to indicate a JDP that would move us to another event--***top-down***
			panel marker NK123456	This block is for the specific on the ground trigger--***bottom-up refinement***
FS EVENT	1. AN9001	2. AN 0001	3. CTB 2	Event sequence # and tgt # or CTB #
	FASCAM	SEAD for CTB 2	CAS on N. MRC	Description of event--asset and HPT
PRI OBS/EXE	COLT 1	COLT 1	ETAC 1	Primary executor--may need ***bottom-up refinement***
OP LOCATION				Primary executor location to execute from--***bottom-up refinement***
ALT OBS/EXE	COLT 2	COLT 2	COLT 1	Alternate executor--may need ***bottom-up refinement***
OP LOCATION				Alternate executor location to execute from--***bottom-up refinement***
TASK	Emplace FASCAM Minefield to delay N. MRB in passes	Suppress AAA in MRC / mark TGT Area	Destroy 1 tank & 3 BMPs in N. MRC	Task of this event: tells observer ***what*** he is trying to do with this event = attack guidance. ***Enemy formation and effect***
PURPOSE	To allow attack by CAS	To prevent llosses to CAS while attacking N. MRB at FASCAM	To attrit 1/3 from N. MRC and delay N. MRB	Purpose of this event: tells observer ***why*** he is attacking the event so he can do the right thing without additional guidance. ***In terms of friendly maneuver***
EFFECTS	N. MRB delayed 10-min	AAA suppressed at H-1 WP Mark	N. MRB delayed 5 min	Effects or endstate of event--gives us criteria to assess our event and reattack if required
WPN/UNIT	R BN 155	DS BN 155	2 A-10s	The top-down asset to accomplish the task
MUNITIONS/ VOLUME	96 RAAMS 24 ADAMS med density	BN 3 DPICM 1 GUN WP	8 maverick	The bottom-up refinementfrom FA or ALO on the specifics of the attack asset
FSCM	CFL PL BLOOD NFA 1, NFA 2			The FSCM that support the event or change with the event
ACA			ACA BLUE	ACA in effect
NOTES		CTB 2: 1234 - 1238 - 1638 - 1634		Other notes or remarks

TARGET SYNCHRONIZATION MATRIX (TSM)

DECIDE			DETECT		DELIVER		ASSESS	
Priority	Category	HPTs	Agency	Asset	Agency	Asset	Agency	Asset
1	RISTA	COPs in main attack zone	1-5 FA	COLT 2	1. 1-5 FA	CPHD	1-5 FA	COLT 2
			3-37 AR	Scouts			3-37 AR	Scouts
			3-37 AR	Main attack company	2. 2-14 FA	DPICM	3-37 AR	Main attack company
2	Fire Support	2S1	2-14 FA	Q-36	1. 2-14 FA	DPICM	2-14 FA	Q-36
			Divarty	Q-37	2. Divarty	GS Arty	Divarty	Q-37
		S19	2-14 FA	Q-36	1. 2-14 FA	DPICM	2-14 FA	Q-36
			Divarty	Q-37	2. Divarty	GS Arty	Divarty	Q-37
		Mortars in main attack zone	2-14 FA	Q-36	1. 2-14 FA	HE	2-14 FA	Q-36
					2. 1-5 FA	HE		
3	ADA	2S6	G2	ELINT	1. 2-14 FA	HE	G2	ELINT
		SA9			2. 1-5 FA	HE	Aviation	Pilot report
		SA13						
4	Command & Control	Regimental CP	G2	COMINT	1. 1-5 FA	HE	G2	COMINT
					2. 2-14 FA	HE		
					3. Divarty	GS Arty		

MODIFIED TARGET SYNCHRONIZATION MATRIX (MOD-TSM)

**[Modified to include AFATDS target types and intervention point instructions.
Also includes elements of a Delivery Standards Matrix per FM 6-20-10]**

PHASE 1A & HPT / AFATDS TGT TYPE &	TRIGGER / SENSO	WHE / HOW / BD	ATTACK SYSTEM PREFERENCE (SHOOTER UNIT) DS/R	GS	ATACM	ATK HELO	CA	E	INTERVENTION POINT ()Indicates IP is off	REMARK IEW Coord Exclusion, TBA, etc.
Straight Flush (ADA Radar)		**I**		1	2			3	**1. FAIO**	
Hot Shot (ADA Radar	**AQF/GBC**								**2. (Div TAC FSE)**	
Big Fred (CB		**D**	1	1 100m	1 100m	1	1	1 5km	**3. (DIVARTY TOC)**	
Small Fred (CB			2	2 Se	2 Se	2	2	2 Se	**4. B/20**	
Rice Bag (CB Radar)		**Y**	3	3 S	3 S	3	3	3 S		
Counter-Btry Radar =			4	4 30mi	4 30mi	4	4	4 1hr		
BM-22 (Remnants 29 CAA		**I**		3	4	1	2		**1.(a) FAIO**	**IEW Coordination Reqd**
AGRA)	**(a)Div UAV**								**(b) CF**	
BM-21 (28, 12 MRD DAGS)	**(b)Q-37 Rdr**	**80%**	1	1 150m	1 150m	1 2km	1 2km	1	**2. (TAC1 FSE)**	
			2	2 Se	2 Se	2 Bn	2 Bn	2	**3. (a) 75 FA BDE**	
		Y	3	3 S	3 S	3 S/	3 S/	3	**(b) Corps Main FSE**	
Missile Med =			4	4 30mi	4 30mi	4 30mi	4 30mi	4		
2S5 (Remnants 29 CAA AAG)		**I**		3	4	1	2		**1.(a) FAIO**	**1. Avn Atk 28 MRD DAG**
2S19 (28, 12 MRD DAG)	**(a)Div UAV**								**(b) CF**	**if Corps destroy AAG/**
	(b)Q-37 Rdr	**80%**	1	1 150m	1 150m	1 2km	1 2km	1	**2. (TAC1 FSE)**	**AGRA**
			2	2 Se	2 Se	2 Bn	2 Bn	2	**3. (a) 75 FA BDE**	**2. CAS attack 12 MRD**
		Y	3	3 S	3 S	3 S/	3 S/	3	**(b)Corps Main FSE**	**DAG**
Arty, Mdm SP= 90			4	4 30mi	4 30mi	4 30mi	4 30mi	4		
2S6, 30mm SP		**A**	2	1					**1. (a) 1-10 FSE**	
	(a)KIOWA								**(b) Avn Bde FSE**	
	Warrio	**D**	1 50m	1 50m	1	1	1	1	**2. Div TAC FSE**	
	(b)APACHE		2 Se	2 Se	2	2	2	2	**3. (DIVARTY TOC)**	
	LONGBO	**N**	3 S	3 S	3	3	3	3	**4. GS FA**	
ADA, Mdm= 85			4 30mi	4 30mi	4	4	4	4	**DS/R FA**	
SA-13		**A**	2	1					**1. (a) 1-10 FSE**	
SA-11	**(a)KIOWA**								**(b) Avn Bde FSE**	
SA-15	**Warrio**	**D**	1 50m	1 100m	1	1	1	1	**2. Div TAC FSE**	
	(b)APACHE		2 Se	2 Se	2	2	2	2	**3. (DIVARTY TOC)**	
	LONGBO	**N**	3 S	3 S	3	3	3	3	**4. GS FA**	
ADA, Missile= 85			4 45mi	4 45mi	4	4	4	4	**DS/R FA**	
Cmd Btrys (DAG/RAG)		**A**	2	1				3	**1. FAIO**	
	AQF/GBC								**2. Div TAC FSE**	
		N	1 100m	1 150m	1	1	1	1 5km	**3. (DIVARTY TOC)**	
			2 Btr	2 Btr	2	2	2	2 Btr	**4. GS FA, DS/R FA,**	
		N	3 S	3 S	3	3	3	3 S		
Regt CP=			4 1hr	4 1hr	4	4	4	4 1hr		

1=Maximum TLE **2=Minimum size** **3=Stationary(S)/Moving(M)** **4=Target Decay Time** **BDA: Y=Yes**

WHEN: I=Immediate A=As Acquired P=Plan **HOW: S=Suppress N=Neutralize D=Destroy %=Percent Effects Desired**

Appendix C

Artillery and Mortar Capabilities and Limitations

WEAPON	RANGE (km)				RATE OF FIRE Sus/max	RISK ESTIMATE DISTANCE 10% PI .1% (at max range)		RATE OF ILLUM Rds/min	ILLUM AREA (dia. meters)	SMOKE BUILDUP TIME	AVG. BURN TIME
	MAX	DPICM	ILLUM	RAP							
60mm M224	3.5		3.5		20/30 rds/min	65m	175m	4	500m	1/2 min	1 min
81mm M29A1	4.8		3.9		8/25 rds/min	80m	230m	2	360m	1/2 min	1 min
81mm M252	5.8		5.0		15/30 rds/min	80m	230m	2	650m	1/2 min	1 min
107mm M30	6.8		5.5		3/9/18 rds/min			1	800m	1/2 min	1 min
120mm M120	7.2		7.1		4/15 rds/min			2	1500m	1/2 min	1 min
105mm M119A1	11.5	14.1	11.5	19.5	3/10 rds/min	90m	275m	2	800m	WP 1/2 min HC 1-1 1/2	1-1 1/2 3 min
155mm M198	18.3	18.0	17.5	30.1	2/4 rds/min	HE 125 DP 200	450m 475m	1	1000m	WP 1/2 min M825 1/2	1-1 1/2 5-10
155mm M109A5/A6	18.2	17.9	17.5	30.0	1/4 rds/min	HE 125 DP 200	450m 475m	1	1000m	WP 1/2 min M825 1/2	1-1 1/2 5-10
MLRS M270/270A1	M26 Min: 10km Max: 32km ER Min: 13km Max: 45km				12 in 40 seconds		2km				
ATACMS M270 IPDS/ M270A1	BLK I Min: 25km Max: 165km BLK IA Min: 70km Max: 300km BLK II Min: 35km Max: 140km BLK IIA Min: 100 Max: 300km						5km				

Appendix D

CAS Capabilities and Limitations

AIRCRAFT/ SERVICE/ COMMS PACKAGE	LASER CAPABILITY		GUNS	EXTERNAL ORDNANCE
	Laser Spot Tracker	Laser Tgt Designator		
AV-8B/ USMC/ UHF	Yes	No	25mm cannon 300 rounds	Laser-guided bombs; AGM-65 Maverick; GP bombs; CBUs; Napalm; Aerial Mines; 2.75" rockets; 5" rockets; AGM-22 Sidearm
A-10 or OA-10/ USAF/ UHF, VHF-AM, VHF-FM	Yes	No	30mm cannon 1100 rounds	Laser-guided bombs; AGM-65 Maverick; GP bombs; CBUs; Aerial Mines
AC-130H/ USAF/ UHF, SATCOM, AM/FM	No	Yes	105mm howitzer 40mm cannon 20mm cannon	None
F-14 LANTIRN/ USN/ VHF AM-FM, UHF	No	Yes	20mm cannon	Laser-guided bombs; GP bombs; CBUs; Aerial Mines
F-15E/ USAF/ UHF	No	Yes	20mm cannon 512 rounds	Laser-guided bombs; GP bombs; CBUs
F-16/ USAF/ UHF, VHF AM-FM	No	Yes	20mm cannon 515 rounds	Laser-guided bombs; GP bombs; CBUs; AGM-65 Maverick
F/A-18C/ USN, USMC/ UHF, VHF AM-FM	Yes	Yes	20mm cannon 518 rounds	Laser-guided bombs; GP bombs; CBUs; Aerial Mines; 2.75" rockets; 5" rockets; FAE; Napalm; AGM-65 Maverick; AGM-62 Walleye; AGM-84 SLAM; AGM-88 HARM
F/A-18D/ USMC/ UHF, VHF AM-FM	Yes	Yes	20mm cannon 515 rounds	Same as F/A-18C

RISK ESTIMATE DISTANCES

ITEM	DESCRIPTION	DISTANCE IN METERS	
		10% PI	0.1% PI
MK-82 LD	500 lb. Bomb	250	425
MK-82 HD	500 lb. Bomb (retarded)	100	375
MK-82 LGB	500 lb. Bomb (GBU-12)	250	425
MK-83 HD	1000 lb. Bomb	275	475
MK-83 LD	1000 lb. Bomb	275	475
MK-83 LGB	1000 lb. Bomb (GBU-16)	275	475
MK-84 HD/LD	2000 lb. Bomb	325	500
MK-84 LGB	2000 lb. Bomb (GBU-10/24)	225	500
MK-20	Rockeye	150	225
MK-77	500 lb. Napalm	100	150
CBU-55/77	Fuel-air Explosive		
CBU-52	CBU (all types)	275	450
CBU-58/71	CBU (all types)	350	525
CBU-87	CBU (all types)	175	275
CBU-89/78	CBU (all types)	175	275
2.75” FFAR	Rockets w/various warheads	160	200
SUU-11	7.62mm minigun		
M-4, M-12, SUU-23, M-61	20mm Gattling gun	100	150
CAU-12	25mm gun	100	150
GPU-5a, GAU-8	30mm Gattling gun	100	150
AGM-65	Maverick (TV, IIR, laser-guided)	25	100
MK-1/MK-21	Walleye II (1000 lb. TV-guided) bomb	275	500
MK-5/MK-23	Walleye II (2400 lb. TV-guided) bomb		
AC-130 gunship	105mm howitzer 40/25/20mm cannon	80 35	200 125

Appendix E

Naval Surface Fire Support Capabilities and Limitations

WEAPON	MAX RANGE FULL CHARGE	RAP	MAX RANGE REDUCED CHARGE	RATE OF FIRE SUS / MAX	AMMO
5" / 54	23.1km ICM – 23km (ICM fielded 4QFY01)	29.2km	12.2km	20 / 20	HE, SMOKE, ILLUM, WP, RAP
5" / 62 (fielded in the 01-02 timeframe)	Conv. –23.1km ICM – 40km ERGM-82km	29.2km	12.2km	10-12 / 20 10 – ERGM	HE, SMOKE, ILLUM, WP, RAP, ERGM
Land Attack Standard Missile (LASM) (fielded in the 03-05 timeframe)	300km				HE, Blast Fragmentation

Notes: Conv. – Suite of conventional munitions
ERGM – Extended range guided munitions
ICM – Improved conventional munition
LASM – Land attack standard missile. Can be fired from a variety of ships.

RISK ESTIMATE DISTANCES

ITEM / SYSTEM	DESCRIPTION	Distance in meters at max range	
		10% PI	0.1% PI
NSFS MK-45	5" / 54 gun	250	600

Appendix F

Target Acquisition and IEW Systems

Firefinder Radars

AN/TPQ-36

F-1. The AN/TPQ-36 is optimized to locate shorter-range, high-angle, lower velocity weapons such as mortars and shorter range artillery. However, it can also locate longer range artillery and rockets within its maximum range. For mortars and artillery, the higher probability of detection is approximately 12,000 meters. Minimum and maximum detection ranges can be established; however, at least 900 meters difference in maximum and minimum ranges is required.

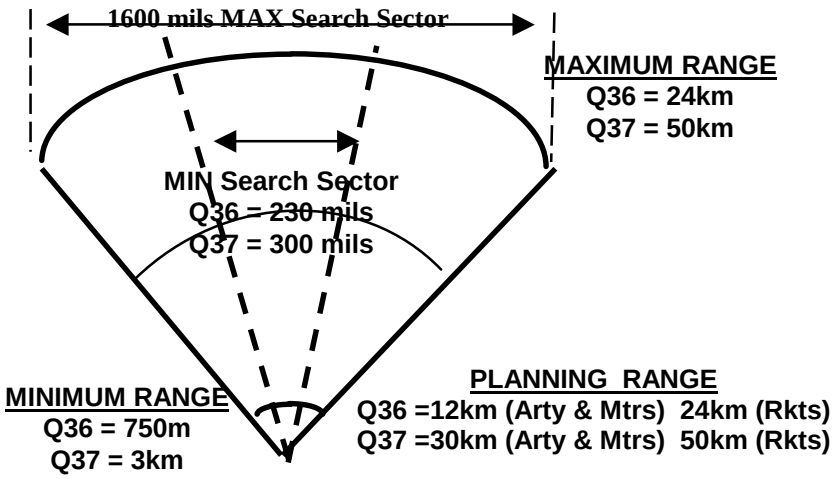
F-2. The highly mobile AN/TPQ-36 is normally located **3 to 6 kilometers (km)** behind the forward line of own troops (FLOT). The AN/TPQ-36 can be emplaced and ready for operation within 15 minutes and can be march-ordered within 10 minutes for version VII systems during daylight hours.

AN/TPQ-37

F-3. The AN/TPQ-37 is optimized to locate longer-range, low-angle, higher velocity weapons such as long range artillery and rockets. However, it will also locate short-range, high-angle, lower velocity weapons complementing the AN/TPQ-36. For artillery, the higher probability of detection is approximately 30 kilometers. Minimum and maximum detection ranges can be established for the Q-37, but like those for the Q-36, at least 900 meters difference in maximum and minimum ranges is required.

F-4. The AN/TPQ-37 sector of search is from 300 mils minimum to 1,600 mils maximum. The Q-37 is normally deployed **8 to 12 kilometers (km)** behind the FLOT. The Q-37 can be emplaced and ready for operation within 30 minutes and march-ordered within 15 minutes during daylight hours.

Firefinder Capabilities & Limitations



Radar Zones

Critical Friendly Zone (CFZ)

F-5. A CFZ is an area, usually a friendly unit or location, that the maneuver commander designates as critical. It is used to protect an asset whose loss would seriously jeopardize the mission. When the computer predicts that an enemy round will impact in a CFZ, the computer will report the location of the weapon that fired the round in precedence ahead of all other detections. Any location of a weapon firing into a CFZ will result in an immediate call for fire (FM;CFF message), unless it is manually overridden by the radar operator. The FM;CFF message is received by IFSAS/AFATDS as a Priority 1 message. Thus, a CFZ provides for the most responsive submission of targets to the fire support system. Some examples where the commander may use CFZs are: Battle positions (BPs), Breach points, Air-assault/Airborne LZs and PZs, Forward scout positions, Support by Fire Positions, Attack by Fire Positions, Choke points along maneuver routes, and Aviation FARPS.

Call-For-Fire Zones

F-6. A CFFZ designates a search area forward of the FLOT that the maneuver commander wants suppressed, neutralized, or destroyed. An area designated as a CFFZ would likely be on enemy fire support positions and is closely tied to information developed during the IPB process and the High Payoff Target List (HPTL). A CFFZ provides the second most responsive priority of request for fire generated by the radar. A target identified in a CFFZ will generate an FM;CFF Priority 2 message. However, the commander may upgrade this to a Priority 1 message for certain CFFZs. Some examples where a CFFZ may be used are: Enemy mortar positions, Enemy artillery groups, Enemy missile positions.

Artillery Target Intelligence Zones

F-7. An ATIZ is an area in enemy territory that the maneuver commander wishes to monitor closely. Any weapons acquired in this zone will be reported to the IFSAS/AFATDS computer ahead of all target detections except CFZ and CFFZ, but the detections will only result in a target report (ATI;CDR). Examples where an ATIZ could be used are the same as for a CFFZ.

Censor Zones

F-8. A CZ is an area from which the commander wishes to ignore all target detections. CZs must be used very judiciously, since the computer does not report to the operator a round originating from a CZ. A CZ may be used to ignore a friendly artillery position that, because of its aspect angle to the radar, could be detected as enemy artillery. This situation could occur when an uneven FLOT exists or when friendly units are in enemy territory. A CZ may also be used when artillery fires in support of rear operations.

Zone Management

F-9. Counterfire is not a separate battle and is the responsibility of the Maneuver Commander. Managing zones to facilitate the commander’s intent and guidance is an important element in force protection and prioritizing fire support efforts. The keys to successful employment of radar zones are the interpretation of the maneuver commander's planning guidance and the integration of the fire support officers into the development, refinement and triggering of planned zones.

F-10. There is a distinct difference between zone management in the brigade sector, (AN/TPQ-36) and the division sector (AN/TPQ-37). In order to be responsive in the delivery of prioritized counterfire to support operations, such as breaching operations, the Brigade Combat Team and

task force FSOs must be involved with the planning, refinement and triggering of the zones. Accordingly, the BDE FSE must prioritize the Brigade Combat Team (BCT) sector and allocate radar zones to support the scheme of maneuver based on the commander's planning guidance. Critical to the success of the Brigade Combat Team's plan will be the coordination and availability of redundant radar coverage by the Divarty (AN/TPQ-37). This coverage must be built into the planning guidance and coordinated as early as possible.

Strike/Reconnaissance (STRIKER)

F-11. The mission of the Striker platoon is to provide the maneuver brigade commander with dedicated observation teams that execute essential fire support tasks (EFST) throughout the brigade's AO. It is a dedicated asset that the brigade commander, through the brigade fire support officer**,** uses to execute EFSTs at depth for the brigade.

F-12. The Striker Platoon leader acts as the fire support officer (FSO) for the Brigade Recon Team. The platoon normally operates in direct support relationship to the brigade (whether formally or informally, vice operating in support of the BRT. Depending on METT-TC considerations, Strikers may be task organized to subordinate Task Forces. They operate out of the same or similar platform as the scout elements in the brigade and are capable of both dismounted and mounted operations. The Striker platoon can provide reconnaissance and surveillance (R&S) as a secondary mission. However, execution of R&S tasks may impact its primary mission of providing the observation and subsequent attack of brigade high payoff targets and must be carefully balanced.

Combat Observation Lasing Team (COLT)

F-13. The COLT is a brigade-level observer team designed to maximize the use of smart munitions. Although originally conceived to interface with the Copperhead munition, a COLT can be used with any munition that requires reflected energy for final ballistic guidance. COLTs can also be used as independent observers to weight key or vulnerable areas. The ground/vehicular laser locator designator (G/VLLD) provides the COLT with accurate range, azimuth and vertical angle to attack targets with standard munitions as well.

Improved Remotely Monitored Battlefield Sensor System (IREMBASS)

F-14. IREMBASS is a ground-based, all-weather, day and night, battlefield surveillance, target development, and early warning system capable of remote operations. Its purpose is to detect, classify and report in real time, personnel and vehicular (wheel and track) activities within the area of deployment. The nominal sensor transmission range is 15 km, with an additional 15 km capability per employed repeater (part of the system).

F-15. Once in place, sensors can be left unattended for up to 30 days. The system will report a person, or tracked or wheeled vehicle to an operator station. The operator can use sensor data to calculate the number of targets, their location, speed and direction of travel.

Ground Surveillance Radar (GSR)

F-16. GSR teams provide mobile, all-weather battlefield surveillance. When employed in pairs they can provide observation from a given vantage point continuously. GSR targets are classified as dismounted, light vehicle, heavy vehicle, or tracked vehicle. The GSR has a line of sight range of 10 km against vehicles and 6 km against personnel. Though effective in low visibility, foliage, heavy rain and snow restrict its detection capability.